Walnut Valley Water District

FINAL REPORT

# 2010 Urban Water Management Plan

July 2011

carollo

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Walnut Valley Municipal Water District
2010 Urban Water Management Plan

# Contact Sheet

Date plan submitted to the Department of Water Resources: July 20, 2011

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The Water supplier is a: **Municipal Water District**

The Water supplier is a: **Retailer**

Utility services provided by the water supplier include: **Water, Recycled Water**

Is This Agency a Bureau of Reclamation Contractor? **No**

Is This Agency a State Water Project Contractor? **No**


**Walnut Valley Water District**

**URBAN WATER MANAGEMENT PLAN**

**FINAL**
July 2011

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**Walnut Valley Water District**

# Urban Water Management Plan

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| Abbreviation | Description |
|---|---|
| AB | Assembly Bill |
| ADD | Average Day Demand |
| af | Acre Feet |
| afy | Acre Feet per Year |
| BPP | Basin Pumping Percentage |
| CDHS | California Department of Health Services |
| CDR | Center for Demographic Research |
| CIMIS | California Irrigation Management Information System |
| CRWQCB | California Regional Water Quality Control Board |
| CVP | Central Valley Project |
| DOF | Department of Finance |
| DMMs | Demand Management Measures |
| du/ac | Dwelling Units per Acre |
| DWR | Department of Water Resources |
| ETo | Evapotranspiration |
| FAR | Floor Area Ratio |
| GMP | Groundwater Management Plan |
| GPCD | Gallons per Capita per Day |
| gpm | Gallons per Minute |
| GWR | Groundwater Replenishment System |
| IRP | Integrated Resource Plan |
| LACSD | Los Angeles County Sanitation District |
| LRP | Local Resources Program |
| MAF | Million Acre Feet |
| MDD | Maximum Day Demand |
| MG | Million Gallons |
| mgd | Million Gallons per Day |
| mg/l | Milligrams per Liter |
| MWDSC | Metropolitan Water District of Southern California |
| NPDES | National Pollutant Discharge Elimination System |
| PCE | Tetrachloroethylene |
| SB | Senate Bill |
| SCAG | Southern California Association of Governments |
| SDP | Seawater Desalination Program |
| SWP | State Water Project |
| SWS | Suburban Water Systems |
| TCE | Trichloroethylene |
| TDS | Total Dissolved Solids |
| UWMP | Urban Water Management Plan |
| UWMPA | Urban Water Management Planning Act |
| WMP | Water Master Plan |
| WRP | Water Reclamation Plant |
| WSDM | Water Surplus and Drought Management |
| WSRP | Water Shortage Response Plan |
| VOC | Volatile Organic Compound |

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| No. | UWMP requirement [a] | Calif. Water Code reference | Additional clarification | UWMP location |
|---|---|---|---|---|
| PLAN PREPARATION | | | | |
| 4 | Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable. | 10620(d)(2) | | Section 1.3<br>Appendix B |
| 6 | Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments. | 10621(b) | | Section 1.4<br>Appendix B |
| 7 | Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq. | 10621(c) | | Appendix B |
| 54 | Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan. | 10635(b) | | Section 1.3<br>Appendix B |
| 55 | Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. | 10642 | | Appendix B |
| 56 | Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area. | 10642 | | Section 1.4<br>Appendix B |
| 57 | Provide supporting documentation that the plan has been adopted as prepared or modified. | 10642 | | Appendix B |
| 58 | Provide supporting documentation as to how the water supplier plans to implement its plan. | 10643 | | Section 6.3 |

| No. | UWMP requirement [a] | Calif. Water Code reference | Additional clarification | UWMP location |
|---|---|---|---|---|
| 59 | Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes. | 10644(a) | | Section 1.3<br>Appendix B |
| 60 | Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours | 10645 | | Section 1.3<br>Appendix B |
| SYSTEM DESCRIPTION | | | | |
| 8 | Describe the water supplier service area. | 10631(a) | | Chapter 2<br>Figure 2.1 |
| 9 | Describe the climate and other demographic factors of the service area of the supplier | 10631(a) | | Sections 2.3 and 2.4 |
| 10 | Indicate the current population of the service area | 10631(a) | Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M. | Section 2.3 |
| 11 | Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections. | 10631(a) | 2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents. | Section 2.3 |
| 12 | Describe other demographic factors affecting the supplier's water management planning. | 10631(a) | | Section 2.3 |
| SYSTEM DEMANDS | | | | |
| 1 | Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data. | 10608.20(e) | | Section 6.2<br>Section 5.1<br>Tables 6.1 to 6.4 |
| 2 | *Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009. | 10608.36<br>10608.26(a) | Retailers and wholesalers have slightly different requirements | Section 1.4 |

| No. | UWMP requirement [a] | Calif. Water Code reference | Additional clarification | UWMP location |
|---|---|---|---|---|
| 3 | Report progress in meeting urban water use targets using the standardized form. | 10608.40 | | Not Applicable Until 2015 |
| 25 | Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture. | 10631(e)(1) | Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years. | Section 5.2 Table 5.3 |
| 33 | Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types | 10631(k) | Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030. | [To Be Included In Appendix B] |
| 34 | Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier. | 10631.1(a) | | Table 5.4 |
| SYSTEM SUPPLIES | | | | |
| 13 | Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030. | 10631(b) | The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided. | Section 3.1 Table 3.1 |
| 14 | Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column. | 10631(b) | Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other. | Section 3.2 |
| 15 | Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization. | 10631(b)(1) | | Section 3.2 |
| 16 | Describe the groundwater basin. | 10631(b)(2) | | Section 3.2 |
| 17 | Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree. | 10631(b)(2) | | Section 3.2 |

| No. | UWMP requirement [a] | Calif. Water Code reference | Additional clarification | UWMP location |
|---|---|---|---|---|
| 18 | Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column. | 10631(b)(2) | | Section 3.2<br>Appendix D |
| 19 | For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column. | 10631(b)(2) | | Section 3.2 |
| 20 | Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years | 10631(b)(3) | | Section 3.2 |
| 21 | Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped. | 10631(b)(4) | Provide projections for 2015, 2020, 2025, and 2030. | Section 3.2 |
| 24 | Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis. | 10631(d) | | Section 7.6 |
| 30 | Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project. | 10631(h) | | Section 7.3 |
| 31 | Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater. | 10631(i) | | Section 3.5<br>Section 7.7 |
| 44 | Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area. | 10633 | | Chapter 4 |
| 45 | Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal. | 10633(a) | | Section 4.1 |

| No. | UWMP requirement [a] | Calif. Water Code reference | Additional clarification | UWMP location |
|---|---|---|---|---|
| 46 | Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project. | 10633(b) | | Section 4.1 |
| 47 | Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use. | 10633(c) | | Section 4.2 |
| 48 | Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses. | 10633(d) | | Section 4.3 |
| 49 | The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected. | 10633(e) | | Sections 4.2 and 4.3 |
| 50 | Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year. | 10633(f) | | Section 4.4 |
| 51 | Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use. | 10633(g) | | Not Applicable |
| WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b] | | | | |
| 5 | Describe water management tools and options to maximize resources and minimize the need to import water from other regions. | 10620(f) | | Section 3.3, 3,4 and 3.5 |
| 22 | Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years. | 10631(c)(1) | | Sections 7.4 and 7.5 |
| 23 | For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable. | 10631(c)(2) | | Section 7.3 |
| 35 | Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage | 10632(a) | | Chapter 8 |

| No. | UWMP requirement [a] | Calif. Water Code reference | Additional clarification | UWMP location |
|---|---|---|---|---|
| 36 | Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply. | 10632(b) | | Section 7.5 |
| 37 | Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster. | 10632(c) | | Sections 8.4 |
| 38 | Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning. | 10632(d) | | Section 8.2.1 |
| 39 | Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply. | 10632(e) | | Section 8.2 |
| 40 | Indicated penalties or charges for excessive use, where applicable. | 10632(f) | | Section 8.2.2 |
| 41 | Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments. | 10632(g) | | Section 8.3 |
| 42 | Provide a draft water shortage contingency resolution or ordinance. | 10632(h) | | Section 8.1<br>Appendix E |
| 43 | Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis. | 10632(i) | | Section 8.5 |
| 52 | Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability | 10634 | For years 2010, 2015, 2020, 2025, and 2030 | Section 3.5 |

| No. | UWMP requirement [a] | Calif. Water Code reference | Additional clarification | UWMP location |
|---|---|---|---|---|
| 53 | Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier. | 10635(a) | | Section 7.4 and 7.5 |
| DEMAND MANAGEMENT MEASURES | | | | |
| 26 | Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided. | 10631(f)(1) | Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules. | Section 6.3 |
| 27 | Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP. | 10631(f)(3) | | Section 6.3 |
| 28 | Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand. | 10631(f)(4) | | Section 6.3 |
| 29 | Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work. | 10631(g) | See 10631(g) for additional wording. | Not Applicable |
| 32 | Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU. | 10631(j) | Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29. | Not Applicable |

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.

**Chapter 1**

# INTRODUCTION

## 1.1 PURPOSE

The California Water Code requires urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMPs) for submission to the California Department of Water Resources (DWR). The UWMPs, which must be filed every five years, must satisfy the requirements of the Urban Water Management Planning Act (UWMPA ) of 1983 including amendments that have been made to the UWMPA. The UWMPA requires urban water suppliers servicing 3,000 or more connections, or supplying more than 3,000 acre-feet (af) of water annually, to prepare an UWMP.

The purpose of the UWMP is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, verify that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during drought conditions. This report, which was prepared in compliance with the California Water Code and as set forth in the guidelines established by the DWR, constitutes the Walnut Valley Water District (District) 2010 UWMP.

## 1.2 BACKGROUND

### 1.2.1 Urban Water Management Planning Act

In 1983, State Assembly Bill (AB) 797 modified the California Water Code Division 6, by creating the UWMPA. Several amendments to the original UWMPA, which were introduced since 1983, increased data requirements and the planning elements to be included in the 2005 and 2010 UWMPs.

Initial amendments to the UWMPA required that total projected water use be compared to water supply sources over the next 20 years, in 5-year increments. Recent DWR guidelines also suggest projecting through a 25-year planning horizon to maintain a 20-year timeframe until the next UWMP update has been completed and for use in developing Water Supply Assessments.

Other amendments require that UWMPs include provisions for recycled water use, demand management measures, and a water shortage contingency plan, set forth therein. Recycled water was added in the reporting requirements for water usage and figures prominently in the requirements for evaluation of alternative water supplies, when future projections predict the need for additional water supplies. Each water supplier must also describe demand management measures (DMMs) that are being implemented, or scheduled for implementation.

In addition to the UWMPA and its amendments, there are several other regulations that are related to the content of the UWMP. In summary, the key relevant regulations are as follows.

- AB 1420: Requires implementation of DMMs/best management practices (BMPs) and meeting a 20 percent demand reduction by 2020 to qualify for water management grants or loans.
- AB 1465: Requires water suppliers to describe opportunities related to recycled water use and stormwater recapture to offset potable water use.
- SB 1087: Requires water suppliers to report projected water demands for planned lower income units.
- Amendment SB 318 (Alpert, 2004) requires the UWMP to describe the opportunities for development of desalinated water, including but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
- AB 105 (Wiggins, 2004) requires urban water suppliers to submit their UWMPs to the California State Library.
- SBx7-7: Requires development and use of new methodologies for reporting population growth estimates, base per capita use, and per capita targets for 2015 and 2020 . This bill also extended the 2010 UWMP adoption deadline for retail agencies to July 1, 2011.

The UWMPA is included for reference in Appendix C.

### 1.2.2 Previous Urban Water Management Plan

Pursuant to the UWMPA, the District previously prepared an UWMP in 2005, which was approved and adopted on December 20, 2005. This 2010 UWMP report serves as an update to the 2005 UWMP and pulls extensively from that report.

## 1.3 COORDINATION WITH APPROPRIATE AGENCIES

The UWMPA requires that the UWMP identify the water agency's coordination with appropriate nearby agencies.

> *10620 (d) (2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*

The District is the sole water supplier for the area. While preparing the 2010 UWMP, WVWD coordinated its efforts with relevant agencies to ensure that the data and issues discussed in the plan are presented accurately. Table 1.1 summarizes how the UWMP preparation was coordinated with different agencies.

**Table 1.1 Coordination with Appropriate Agencies**

| Agencies | Participated in Developing the Plan | Commented on the Draft | Attended Public Meetings | Was Contacted for Assistance | Was Sent a Copy of the Draft Plan | Was Sent a Notice of Intention to Adopt | Not Involved/ Not Informed |
|---|---|---|---|---|---|---|---|
| LA County Sanitation District | | | | ✓ | | ✓ | |
| Los Angeles County | | | | ✓ | | ✓ | |
| City of Pomona | | | | ✓ | | ✓ | |
| City of Industry | | | | ✓ | | ✓ | |
| City of West Covina | | | | | | ✓ | |
| City of Walnut | | | | | | ✓ | |
| City of Diamond Bar | | | | | | ✓ | |
| Three Valleys Municipal Water District | | | | ✓ | | | |

## 1.4 PUBLIC PARTICIPATION AND PLAN ADOPTION

The UWMPA requires that the UWMP show the water agency solicited public participation.

> *10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published … After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*

In accordance with the UWMPA, the District held a public hearing and adopted the 2010 UWMP on June 20, 2011. A copy of the associated documentation is included in Appendix B. The hearing provided an opportunity for the District's customers, residents, and employees to learn and ask questions about the current and future water supply.

A notice of the public hearing was published in the local newspaper, notifying interested parties that the draft 2010 UWMP was under preparation. Pursuant to California Code Section 6066, a notification of the time and place of the public hearing was published in the local newspaper on June 6, 2011 and June 13, 2011. A copy of these notifications is included in Appendix B.

The Final Draft 2010 UWMP was presented to the District's Board of Directors as an information item on June 20, 2011. The 2010 UWMP was then adopted by resolution of the District Board of Directors on June 20, 2011 following a public hearing. This public hearing provided an opportunity for the District's customers, residents, and employees to learn and ask questions about the current and future water supply of the District.

## 1.5 REPORT ORGANIZATION

The UWMP contains eight chapters, followed by appendices that provide supporting documentation for the information presented in the report. The chapters are briefly described below:

**Chapter 1 - Introduction.** This chapter presents the purpose of this UWMP, describes the efforts of the District to coordinate the preparation of the UWMP with appropriate nearby agencies, and discusses the measures used to solicit public participation in the UWMP.

**Chapter 2 - Service Area.** This chapter presents a description of the water purveyor's service area and various aspects of the area served including climate, population, and other demographic factors.

**Chapter 3 – Water Supply Sources.** This chapter presents a description of the District's water supply sources. The description of water supplies includes information on the usage of imported water and an overview of usage of recycled water as well as groundwater.

**Chapter 4 – Recycled Water.** This chapter includes information on the District's existing recycled water system and usage, as well as the projected expansion of recycled water use according to the most recent Recycled Water Master Plan.

**Chapter 5 – Water Demands.** This chapter presents a discussion of water demands within the District's service area and provides water demand projections through year 2035.

**Chapter 6 – Water Conservation.** This chapter provides analyses associated with calculations of the Water Conservation Act of 2009 water conservation target as well as a description of the District's water conservation efforts and BMPs.

**Chapter 7 – Water Supply Reliability.** In this chapter, the UWMP presents the reliability of the District's water supplies. This includes a discussion on imported water reliability. In addition, there is an analysis of supply availability in a single dry year and in multiple dry years.

**Chapter 8 – Water Shortage Contingency Plan.** This chapter includes an urban water shortage contingency analysis that includes stages of action to be undertaken in the event of water supply shortages; a draft water shortage contingency resolution or ordinance; prohibitions, consumption reduction methods and penalties; an analysis of revenue and expenditure impacts and measures to overcome these impacts; actions to be taken during a catastrophic interruption; and a mechanism for measuring water use reduction.

**Chapter 2**

# SERVICE AREA AND POPULATION

The UWMPA requires that the UWMP include a description of the water purveyor's service area and various aspects of the area served including climate and population.

> *10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:*
>
> *10631. (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.*

## 2.1 LOCATION

The District service area comprises a number of suburban residential communities located approximately 20 miles east of downtown Los Angeles. The service area includes all of the City of Diamond Bar together with portions of the cities of Walnut, Industry, West Covina, and Pomona, and the eastern portion of the unincorporated Rowland Heights area. The District's service are encompasses 17,966 acres, or approximately 28 square miles.

## 2.2 LAND USE

The District service area is located in Walnut Valley and is primarily a residential area with most of the industrial and commercial uses located within the City of Industry, which runs through the service area. Flatter lands at the base of the San Jose and Puente hills were initially developed into suburban communities in the 1950's and 60's. Continued residential development since the 1980's has expanded into both adjacent hillsides. These land use changes have caused a shift from historically local agricultural groundwater use to residential use, requiring high quality imported water.

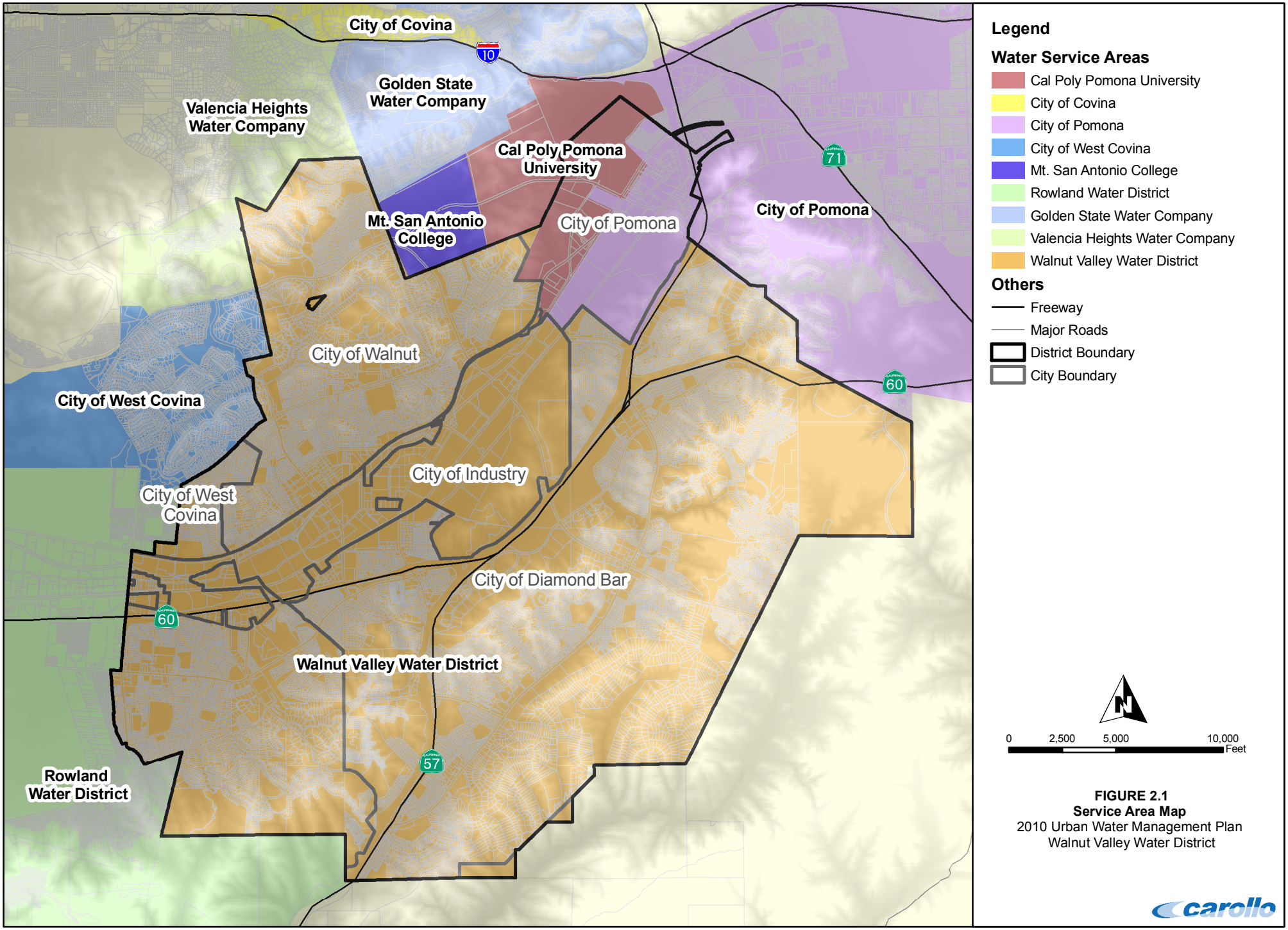


**FIGURE 2.1**
**Service Area Map**
2010 Urban Water Management Plan
Walnut Valley Water District

## 2.3 POPULATION

For this UWMP, historic population estimates were updated based on an analysis of the 2000 U.S. census tract information. While some of the 2010 census data has recently became available, this new data does not contain information on several demographic factors. Due to this lack of detail in the 2010 census data at this time, year 2000 census data was used to generate population estimates.

In order to create accurate and annual historic population data, year 2000 census population data is determined for each census tract in the service area. Secondly, the number of active connections for each census tract in the year 2000 is then determined using District billing records. The population data is then combined with the connection data to form a year 2000 person to connection ratio. Once this ratio is generated, it is applied to the District's annual connection data to generate an annual historic population.

This method for creating historic population data is required because the District's service area is not contiguous with any area for which there is accurate historic population data. This method is specific and outlined in the California Department of Water Resources (DWR) UWMP guidelines.

To generate population projections for future years, Southern California Association of Governments (SCAG) data was utilized. SCAG establishes population projections for each census tract that falls within its member agency's geographical area. Because SCAG data is based on census tracts, the same census tracts that are used for historical population data are then used for SCAG population projections.

Based on the methods described above, the District's 2010 population is estimated to be 113,236. Population projections, shown in Table 2.1 and Figure 2.2, are used to forecast water requirements for the District.

**Table 2.1 Population Projections**

| | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| Service Area Population[(1)] | 113,236 | 117,715 | 121,926 | 126,057 | 130,050 | 133,816 |

Notes:
(1) Source: SCAG Population Projections by Census Tract (SCAG, 2007)

As shown in Table 2.2 and Figure 2.2, it is anticipated that the District's service area population will grow by approximately 20,000 over the 25 years to around 134,000 in 2035. It should be noted that the population projections shown in this report represent an increase in projections estimated in previous planning studies for the District's service area. It is also important to note that a slight discrepancy exists between the 2009 historical value (106,383) and the future projections beginning in 2010 (113,236), due to the lower 2010 value being generated by the population to service connections ratio historic method, while

the higher 2010 value was created by using the census tract based SCAG population projection data. The SCAG projections are higher because SCAG created their most recent estimates in 2007.

Historic population and population projections are shown in Figure 2.2.

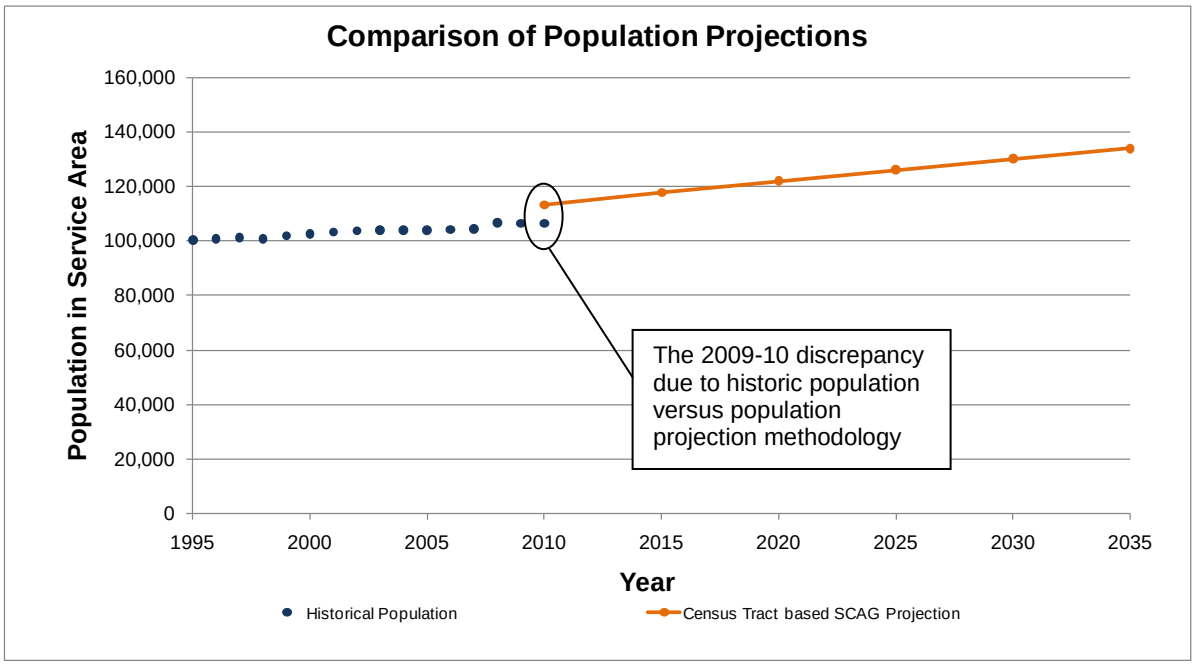


**Figure 2.2 Historical and Projected Population**

## 2.4 CLIMATE

The District's service area climate is a semi-arid, Mediterranean environment with mild winters, warm summers, and moderate rainfall, consistent with interior coastal Southern California. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather or winter storms. The standard monthly average evapotranspiration (ETo) rates, rainfall, and temperature are summarized in Table 2.2.

**Table 2.2 Climate Characteristics**

| Month | Standard Monthly Average ETo[1] (inches) | Monthly Average Rainfall[2] (inches) | Monthly Average Temperature[2] (°F) | | |
|---|---|---|---|---|---|
| | | | Average | Minimum | Maximum |
| January | 1.72 | 3.48 | 51.15 | 38.6 | 63.7 |
| February | 2.03 | 3.4 | 53.1 | 40.5 | 65.7 |
| March | 3.37 | 2.89 | 54.95 | 42.1 | 67.8 |
| April | 4.54 | 1.32 | 58.25 | 44.9 | 71.6 |
| May | 5 | 0.5 | 62.1 | 48.6 | 75.6 |
| June | 5.8 | 0.06 | 67.7 | 52.5 | 82.9 |
| July | 6.51 | 0.03 | 73.85 | 57.3 | 90.4 |
| August | 6.39 | 0.11 | 74 | 57.7 | 90.3 |
| September | 4.69 | 0.28 | 71.35 | 55.6 | 87.1 |
| October | 3.48 | 0.72 | 65 | 50.2 | 79.8 |
| November | 2.27 | 1.44 | 58.45 | 44 | 72.9 |
| December | 1.71 | 2.72 | 52.8 | 39.8 | 65.8 |
| **Annual** | **47.5** | **16.95** | **61.9** | **47.7** | **76.1** |

Notes:
(1) Source: California Irrigation Management Information System (CIMIS) Station 78 - Pomona (CIMIS, 2010). Represents monthly average ETo from March, 1989 to April 2011.
(2) Source: Western Regional Climate Center (WRCC) Station 041779 - Claremont Pomona College, California (WRCC, 2010). Represents monthly average data from February 1893 to December 1980.

As shown in Table 2.2, the District's average monthly temperature ranges from about 51 to 74 degrees Fahrenheit (°F), with an annual average temperature of nearly 62°F. The daily average low and high temperatures have been measured to be 38°F and 90°F, respectively. ETo averages a total of 47.5 inches per year, while the average annual rainfall is nearly 17 inches. Records show that the average monthly precipitation ranges as high as 3.5 inches and as low as almost 0 inches. Most of the rainfall typically occurs during the period of November through April.

**Chapter 3**

# WATER SUPPLY SOURCES

The UWMPA requires that the UWMP include a description of the agency's existing and future water supply sources for the next 20 years. The description of water supplies must include detailed information on groundwater supplies and the groundwater basin, potential opportunities for desalination of groundwater and seawater, and detailed information on the agency's imported water supplies.

> *10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:*
>
> *10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision 10631 (a)*

## 3.1 OVERVIEW OF SUPPLIES AND DISTRIBUTION SYSTEMS

The District has very limited natural water resources and is currently limited to four sources: imported water from Metropolitan Water District of Southern California's (MWDSC) Weymouth Water Treatment Plant, water that has been treated and delivered by Three Valleys Municipal Water District (TVMWD), recycled water from the Los Angeles County Sanitation District (CSDLAC) Pomona Water Reclamation Plant (Pomona WRP), and local groundwater from the Puente and Spadra Basins, which is only used to supplement the recycled water system. As shown in Table 3.1, the District's potable water is provided entirely through wholesale purchases from TVMWD. There are five imported water connections that feed WVWD's potable water transmission and distribution systems: PM-10, PM-12, PM-15, PM-21, and PM-24. These connections deliver water from MWDSC via TVMWD. The Puente Basin is adjudicated, and is governed by the Puente Basin Watermaster. The District's current and projected demands are listed in Table 3.1.

**Table 3.1 Current and Projected Demand**

| | Annual Supply (afy) | | | | | |
|---|---|---|---|---|---|---|
| **Supply Source** | **2010** | **2015** | **2020** | **2025** | **2030** | **2035** |
| Wholesaler (TVMWD) | 25,911 | 24,242 | 22,319 | 23,075 | 23,806 | 24,496 |
| **Total** | 25,911 | 24,242 | 22,319 | 23,075 | 23,806 | 24,496 |

Notes:

Supply shown is based on the demands projected in Chapter 5 incorporating water conservation associated with the Water Conservation Act of 2009 discussed in Chapter 6. The calculations used for the demands are based on a per-capita demand of 163 gpcd and the population projections from Chapter 2.

The District has developed these water resources to provide increased water reliability. This approach has included aggressive use of recycled water and some use of groundwater to

augment recycled water supplies. The District has optimized these limited water resources to help meet the water demands of the growth of the community.

The District operates two water distribution systems: the potable water distribution system and the recycled water distribution system. The following sections provide more details on each system.

### 3.1.1 Potable Water System

Potable water meeting all state and federal drinking water standards is delivered from MWDSC's Weymouth and TVMWD's Miramar treatment plants via major transmission mains. The District then distributes this water through a distribution system consisting of 14 separate pressure zones, 28 storage tanks at 15 individual sites, and approximately 354 miles of pipeline ranging in size from 4- to 36-inches in diameter. The District is interconnected with adjacent water agencies through ten metered connections; eight are available for emergency backup use only, while two are for supply delivery.

### 3.1.2 Recycled Water System

The District's recycled water distribution system includes 288 customer connections, 32 miles of transmission and distribution piping, four wells, a main pump and booster station, and two storage tanks with a combined capacity of four million gallons. More details on the District's recycled water system can be found in Chapter 4 of this UWMP.

## 3.2 GROUNDWATER

*10631 (a) [to 20 years or as far as data is available]. If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

*10631 (b) (1) A copy of any groundwater management plan adopted by the urban water supplier…*

*10631 (b) (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or board has adjudicated the rights to pump groundwater…For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted…*

*10631 (b) (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic records.*

*10631 (b) (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonable available, including, but not limited to, historic use records.*

Groundwater underlying the District's service area is of poor quality and is not currently used for the potable water supply system. However, it is used to augment supplies for the recycled water system. Approximately 30 to 40 percent of the total quantity of recycled water currently used is derived from the local, non-potable groundwater. The District uses four wells to pump water from basins underlying the service area.

Operating Safe Yield (OSY) for the Puente Basin has been established at 1,500 afy.

### 3.2.1 Groundwater Basin Description

There are two groundwater basins that underlie the District service area: Puente Basin and Spadra Basin. The primary basin, Puente Basin, is adjudicated and is governed by the Puente Basin Watermaster representing all overlying interest, including the WVWD, the Rowland Water District and the City of Industry. Potable water is not available from the Puente Basin because it is a narrow, shallow, dense-lensed aquifer that is high in total dissolved solids and nitrate concentrations (WMP, 2002).

The Puente Basin encompasses a surface area of nearly 8,870 acres. The basin is shallow, and bedrock is frequently found at the surface. Boundaries of the Puente Basin are formed on the north and south by the non water-bearing rocks of the San Jose and Puente hills. The eastern boundary runs along the western boundary of the Spadra Basin, separated by bedrock and groundwater divide. To the west, the Puente Basin is bounded by the Main San Gabriel Basin. Groundwater freely flows from the Puente Basin into the Main San Gabriel Basin (MWDSC, 2007).

Primary water-bearing sediments include weathered alluvium from the adjacent hills and recent deposits within San Jose Creek. Well depths range from about 75 feet to 300 feet in the Puente Basin. Total storage within the Puente Basin has been estimated to be approximately 979,650 af (MWDSC, 2007).

The major sources of natural recharge to the Puente Basin are infiltration of rainfall on the valley floor and percolation of runoff from the adjacent mountains. Additional water is imported into the basin from the Pomona Water Recycling Plant (WRP), as well as from MWDSC via the Rowland and Walnut Valley water districts (MWDSC, 2007).

The Puente Basin was adjudicated in 1986. Under the Judgment, the management plan is administered by a three-person Watermaster. The three persons are nominated and appointed according to directives of the Judgment. The Judgment specifies the duties of the Watermaster to include determining Operating Safe Yield and notifying the Court and relevant parties of Annual Pumping Rights and other relevant information. The Judgment provides for up to 100 percent carryover of unpumped water rights for one year, up to 10 percent excess pumping, restricts exportation of groundwater, and makes no provisions for storage of surplus supplies within the groundwater basin (MWDSC, 2007). The Judgment can be found in Appendix D.

The second groundwater basin with the District's service area is the Spadra Basin. The Spadra Basin is currently not managed by a Watermaster or judgment. Primary producers are the City of Pomona and California State Polytechnic University, Pomona. The conversion of agricultural land to urban in the Spadra Basin and the lining of San Jose Creek have limited the groundwater recharge to Spadra Basin. Estimated groundwater production capacity is approximately 1,500 acre-feet per year (afy) with an average production of 850 afy (MWDSC, 2007).

### 3.2.2 Historical Groundwater Concerns

Groundwater movement within the Puente Basin is generally controlled by topography. Faults that may potentially affect groundwater movement have not been identified within the Puente Basin. Because the Puente Basin is constrained on the north and south by bedrock, groundwater generally flows toward the west and northwest. Water levels have been relatively stable in the Puente Basin since 1985 with an overall fluctuation of less than 25 feet (MWDSC, 2007).

### 3.2.3 Groundwater Pumping

The District uses one well to pump groundwater from the Spadra Basin and has three wells pumping from the Puente Basin.

**Table 3.2 Historical Groundwater Pumped from Basin**

| | Groundwater Used to Supplement Recycled Water System (af) | | | | |
|---|---|---|---|---|---|
| | **2006** | **2007** | **2008** | **2009** | **2010** |
| Puente Basin | 682 | 654 | 757 | 722 | 466 |
| Spadra Basin | 0 | 24 | 118 | 170 | 222 |
| **Total** | **682** | **678** | **875** | **892** | **688** |

Note:
(1) Well production data provided by the District

As shown in Table 3.2, annual use of the groundwater wells varies since the District only uses the wells to supplement recycled water supplies during periods of peak demands.

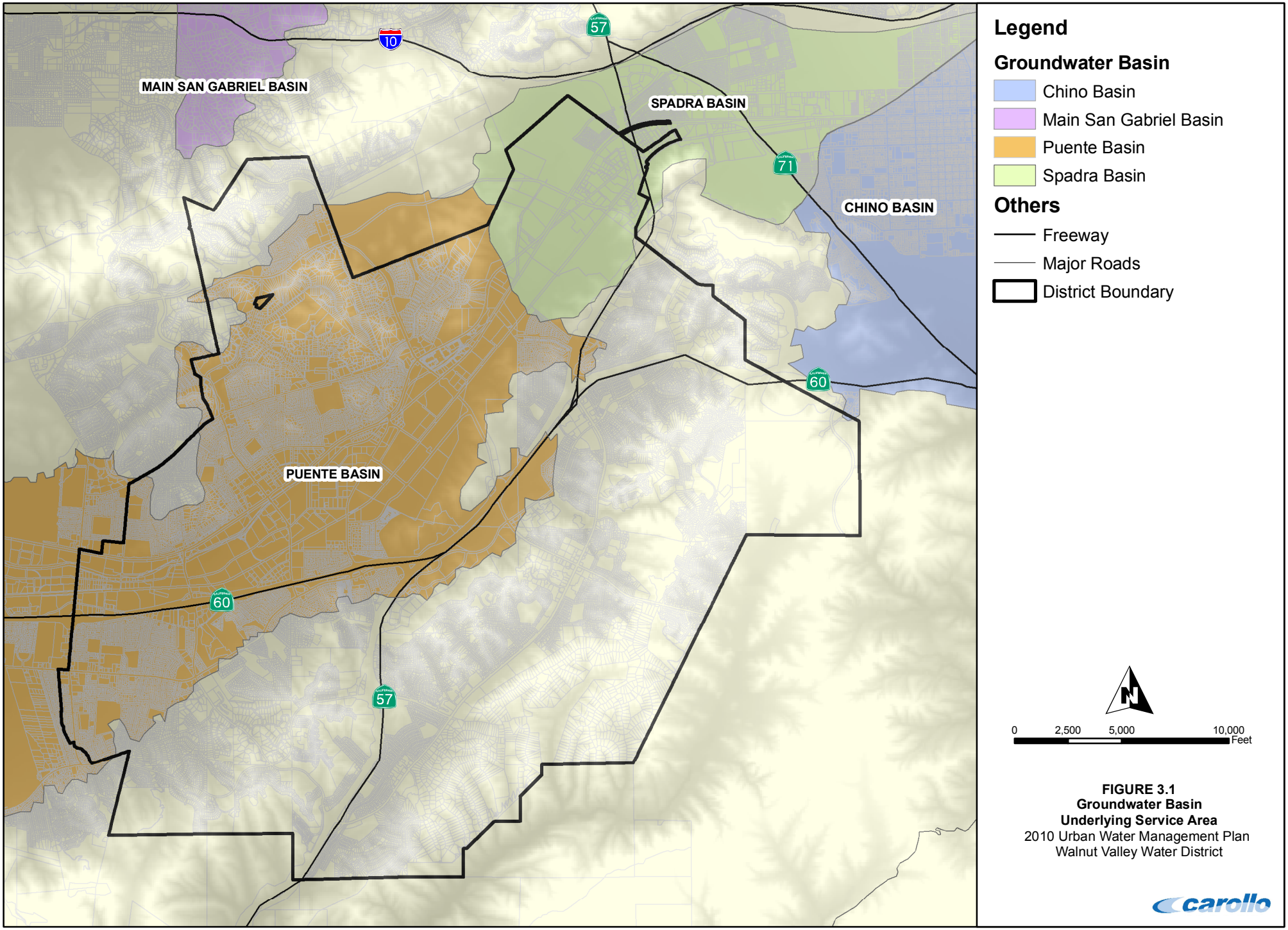


**FIGURE 3.1**
**Groundwater Basin**
**Underlying Service Area**
2010 Urban Water Management Plan
Walnut Valley Water District

carollo

Projections of groundwater to be pumped from the Basin are presented in Table 3.3. These projections are based on the assumption that groundwater will be required to supplement wastewater flows for production of recycled water similar to past trends.

**Table 3.3 Groundwater Pumping Projections for Basin**

| | Groundwater to be Used to Supplement Recycled Water System (af) | | | | |
|---|---|---|---|---|---|
| | **2015** | **2020** | **2025** | **2030** | **2035** |
| Puente Basin[1] | 648 | 648 | 648 | 648 | 648 |
| Spadra Basin[1] | 170 | 170 | 170 | 170 | 170 |
| Future Development[2] | 366 | 366 | 366 | 366 | 366 |
| **Total** | **1,184** | **1,184** | **1,184** | **1,184** | **1,184** |

Notes:

(1) Basin pumping breakdown based on average volumes from 2008 to 2010.

(2) Future development based on planned well drilling, assumed to be the difference between average 2008 to 2010 pumping and projected groundwater pumping.

As shown in Table 3.3, it is anticipated that the amount of groundwater obtained from the basins will increase by 2015. Increased usage will be accounted for by the installation of one to two additional groundwater wells. Actual groundwater usage will vary since the District uses the wells to supplement recycled water supplies during periods of peak demands.

## 3.3 IMPORTED WATER

*10631 (k). Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that indentifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same 5 year increments, and during various water year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan information requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

Imported water is the District's primary water supply and it provides for all potable water demands. The District's imported water supplier is TVMWD, which is one of MWDSC's 26 member agencies. Potable water supplied to the District is processed at MWDSC's Weymouth Treatment Plant (in the City of La Verne), or at TVMWD's Miramar Treatment Plant (in the City of Claremont). The Weymouth treatment plant receives water from the Colorado River Aqueduct (CRA) and State Water Project (SWP), while the Miramar Treatment Plan receives water only from the SWP.

The projected volumes to be imported from TVMWD are provided in Table 3.4. These projections reflect the demand projections provided in Chapter 5. It should be noted these supply projections incorporate water conservation associated with the SB7x7 Water Conservation Act of 2009.

**Table 3.4 Projected Imported Purchases**

| | Annual Supply (afy) | | | | | |
|---|---|---|---|---|---|---|
| **Supply Source** | **2010** | **2015** | **2020** | **2025** | **2030** | **2035** |
| Wholesaler (TVMWD) | 25,911 | 24,242 | 22,319 | 23,075 | 23,806 | 24,496 |
| **Total** | **25,911** | **24,242** | **22,319** | **23,075** | **23,806** | **24,496** |

Notes:
Supply shown is based on the demands projected in Chapter 5 incorporating water conservation associated with the Water Conservation Act of 2009 discussed in Chapter 6. The calculations used for the demands are based on a per-capita demand of 307 gpcd and the population projections from Chapter 2.

As shown in Table 3.4, the District's potable water demands are anticipated to be supplied entirely through imported water from TVMWD, remaining relatively constant from 25,911 afy in 2010 to 24,496 afy in 2035.

As mentioned previously, the District maintains connections to the TVMWD system. The capacities of each of these connections are listed in Table 3.5.

**Table 3.5 Capacity of Imported Water Connections**

| Connection Name | MWDSC Pipeline Designation | Current Capacity (cfs) |
|---|---|---|
| PM-10 | MWDSC Orange County Feeder | 15 |
| PM-12 | MWDSC Orange County Feeder | 4 |
| PM-15 | MWDSC Weymouth WTP | 40(1) |
| PM-21 | MWDSC Miramar WTP | 40(1) |
| PM-24 | MWDSC Middle Feeder | 60 |
| La Verne | Old Baldy Groundwater Well | 40(1) |
| **Total** | | **119** |

Notes:
(1) Connections PM-15, PM-21, and La Verne limited to 40 cfs combined total

As shown in Table 3.5, District's total instantaneous imported water supply capacity is 119 cfs.

## 3.4 RECYCLED WATER

The District's recycled water system receives water from the Pomona (WRP). The District purchases the treated effluent and conveys the supply through the North Side Line (NSL) transmission pipeline to the District's main pumping station. The District uses recycled water to irrigate schools, parks, landscape maintenance districts, freeway slopes, street medians, a cemetery and gold course, and several business landscape areas. Further details of the District's recycled water system can be found in Chapter 4.

## 3.5 DESALINATED WATER

Opportunities for future desalinated water supplies are discussed at the end of Chapter 7.

**Chapter 4**

# RECYCLED WATER

This chapter includes information on water recycling and its potential for use as a water source for the District in accordance with the UWMPA.

> *10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:*
>
> *10633 (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*
>
> *10633 (b) A description of the recycled water currently being used in the supplier's service area, including but not limited to, the type, place and quantity of use.*
>
> *10633 (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse determination with regard to the technical and economic feasibility of serving those uses, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*
>
> *10633 (d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.*
>
> *10633 (e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.*
>
> *10633 (f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems and to promote recirculating uses.*

## 4.1 COLLECTION AND TREATMENT SYSTEMS

The District has been operating a recycled water system since 1986 that currently provides in approximately 1,800 afy of recycled water to over 288 customer connections through 32 miles of transmission and distribution piping, a main pump and booster station, and two storage tanks. The existing recycled water system is capable of delivering up to 2,550 afy for landscape irrigation at local schools, golf courses, street medians, and public buildings. Over 900 acres of irrigated lands within the District's service area are provided recycled water service. Most of the supply is processed at the Pomona Water Reclamation Plant (WRP) situated just outside the District's northeast boundary and delivered via the LACSD's North Side Line (NSL).

WVWD currently has three supply sources for the recycled water system. The primary source is treated wastewater from the Pomona WRP. The secondary source is groundwater pumped from the Puente and Spadra Basins. The third source, imported treated potable

water from MWD, is used during supply shortages or interruptions in service from the Pomona WRP.

WVWD is last in line to receive recycled water from the Pomona WRP and can have its supply reduced if the Spadra landfill takes more water or if production at the Pomona WRP is low. The Fairway Well, another recycled water supplement, is not used directly for irrigation. Due to the relatively poor water quality, well production is blended within the recycled water distribution system prior to use.

All wastewater flows from within the District's service area are conveyed via sewer to the Los Angeles County Sanitation District (LACSD) San Jose Creek WRP for treatment. Most of the recycled water delivered to the District is delivered from the Pomona WRP. Due to the layout of the District's wastewater system, the wastewater generated within the service area is not the same wastewater which is treated and used to meet recycled water demands. For this reason, determining the quantity of the District's wastewater which is treated to recycled water standards is not applicable. As shown in Table 4.1, the amount of wastewater collected and treated in the service area is projected, similar to total system demands, to decrease until 2020. After 2020 conservation targets have been met, wastewater flows will resume a gradual increase.

**Table 4.1 Wastewater Collection and Treatment**

| | Projected Annual Flow (afy) | | | | | |
|---|---|---|---|---|---|---|
| **Type of Wastewater** | **2010** | **2015** | **2020** | **2025** | **2030** | **2035** |
| Wastewater Collected and Treated in Service Area[(1)] | 10,364 | 9,697 | 8,928 | 9,230 | 9,523 | 9,798 |
| San Jose WRP Volume that Meets Recycled Water Standard[(2)] | n/a | n/a | n/a | n/a | n/a | n/a |

Notes:
(1) Based on discussions with District staff, a return to sewer ration of 40 percent was used
(2) San Jose WRP treats water from a large service area, making recycled water volume not applicable

The District originally contracted with the City of Pomona to supply up to 2,000 afy of recycled water. In a May 14, 1997 agreement between the District and LACSD, LACSD secured an agreement with the City of Pomona to provide the District an additional 550 afy of recycled water. This water is on an as-available basis within the City of Pomona's entitlements. In return, the District waived its rights to pursue a violation of California Public Utility Code Service Duplication provisions against LACSD, for serving recycled water to Spadra Landfill and Landlab.

Recycled water produced at Pomona WRP is split between a pumped system supplying most of the City of Pomona's recycled water distribution system, and an effluent diversion structure that allows gravity flow to San Jose Creek or the NSL. The 17,000 foot long NSL serves Lanterman State Hospital, a Pomona customer, and Spadra Landfill, a county facility served by LACSD. Effluent production in excess of the District, City of Pomona, and

LACSD recycled demands divert to San Jose Creek in accordance with a National Pollutant Discharge Elimination System (NPDES) permit.

### 4.1.1 Disposal of Non-Recycled Wastewater

District wastewater is treated at the San Jose WRP. The LACSD wastewater system is structured such that wastewater which is not needed to satisfy recycled water demands bypasses tertiary treatment and flows directly to the Joint Water Pollution Control Plant (JWPCP). This 420 acre plant is located in the City of Carson and provides both primary and secondary treatment for approximately 300 million gallons of wastewater per day from approximately 3.5 million people throughout Los Angeles County. Treated wastewater is disinfected with hypochlorite and sent to the Pacific Ocean through a network of outfalls that extend two miles off the Palos Verdes Peninsula to a depth of 200 feet.

Due to this unique layout of the LACSD wastewater system, determining the precise volume of wastewater disposal for the District is not applicable. Ultimately, the District's wastewater is used first to satisfy the recycled water demands of the San Jose Creek WRP. When wastewater flows exceed San Jose Creek WRP demands, excess water from the District receives secondary treatment and is discharged to the ocean via the JWPCP.

## 4.2 CURRENT RECYCLED WATER USES

Within the District, recycled water is used solely for landscape irrigation, including farms, nurseries, golf courses, roadside irrigation, parks, schools, greenbelts, and maintenance districts.

Table 4.2 summarizes current recycled water usage by use type (solely landscape irrigation) and presents a comparison between the projected use in the 2005 UWMP and the actual recycled water use.

**Table 4.2 2005 UWMP Projected 2010 Recycled Water Use Compared to 2010**

| User Type | Treatment Level | Projected[(1)] 2010 RW Demand (afy) | Actual 2010 RW Demand (afy) |
|---|---|---|---|
| Landscape | Tertiary | 2,915 | 1,750 |
| Industrial | | 0 | 0 |
| Wildlife Habitat/Wetlands | | 0 | 0 |
| Agriculture | | 0 | 0 |
| Groundwater recharge | | 0 | 0 |
| Other | | 0 | 0 |
| **Total** | | **2,915** | **1,750** |

Notes:

1) 1,750 af is an assumption, real value to be supplied by the District

As shown in Table 4.2, District supplied 1,750 af of recycled water in 2010, approximately 700 af less than the projected recycled water in the 2005 UWMP of 2,915 af.

## 4.3 POTENTIAL USES AND PROJECTED DEMAND

Future recycled water uses within the District are anticipated to be landscape irrigation. Recycled water demand projections are presented in Table 4.3

**Table 4.3 Recycled Water Uses – Actual and Potential**

| User Type | Treatment Level | Projected Recycled Water Demand (afy) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
| Landscape Irrigation | Tertiary | 2,200 | 2,670 | 3,140 | 3,516 | 4,080 | 4,550 |
| **Total** | | **2,200** | **2,670** | **3,140** | **3,516** | **4,080** | **4,550** |

Notes:

(1) Data based on liner interpolation, using 2,200 af as 2010 value and 4,550 af as 2035 (build out) value

As shown in Table 4.3, landscape irrigation demands are anticipated to increase from the current demands of 2,200 afy to 4,550 afy. These values are based on the 1999 Recycled Water System Master Plan, which indicates a build out recycled water demand of 4,550 afy for the District.

## 4.4 INCENTIVES AND PLANNING

The District's methods to encourage recycled water use are listed below in Table 4.4.

**Table 4.4 Methods to Encourage Recycled Water Use**

| | Projected Results | | | | | |
|---|---|---|---|---|---|---|
| **Actions** | **2010** | **2015** | **2020** | **2025** | **2030** | **2035** |
| Recycled Water Supply Reliability | - | - | - | - | - | - |
| Exemption from Drought Surcharge | - | - | - | - | - | - |
| Recycled Water Nutrient Content | - | - | - | - | - | - |
| **Total(1)** | **2,200** | **2,670** | **3,140** | **3,516** | **4,080** | **4,550** |

Notes:
(1) Insufficient data was available to link specific actions with recycled water consumption

The District has been delivering recycled water to customers irrigating large landscaped areas since 1986; the communities involved have been supportive of the District's efforts to expand its recycled water system. Customer interest in using recycled water has been generated due in large extent to recycled water's reliability and lower water rates. Furthermore, the nutrient value of recycled water reduces irrigation customer's need to use fertilizer. Over the past 25 years, the District has also made recycled water development a priority. The District has funded installation of recycled water distribution mains and meters and required the installation of irrigation meters for all new developments where there may be a potential for the application of recycled water, further propagating its usage.

Because of these policies, it is assumed that additional customers have incentives to connect to the District's recycled water system.

**Chapter 5**

# WATER DEMANDS

## 5.1 GENERAL

The UWMPA requires that the UWMP identify the water demands of the agency's customers including a breakdown by user classification.

> 10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
>
> 10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the- following uses:
>
> (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.
>
> (2) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.

## 5.2 PAST, CURRENT, AND PROJECTED WATER USE

This section describes the historical, current, and projected water use through year 2035. It also describes the types of customer accounts in the District and the breakdown of accounts throughout the system.

### 5.2.1 Customer Accounts

As of 2010, the District maintains 26,852 water meters. The District classified these meters into the following categories: 24,359 single family residential, 1,127 multi-family residential, 1,188 commercial, and 178 industrial. This account breakdown shows that more than 90 percent of the accounts are classified as residential, while the remaining billing classifications represent less than ten percent of the District's accounts. The average number of accounts from 2009 and 2010 is shown in Figure 5.1.

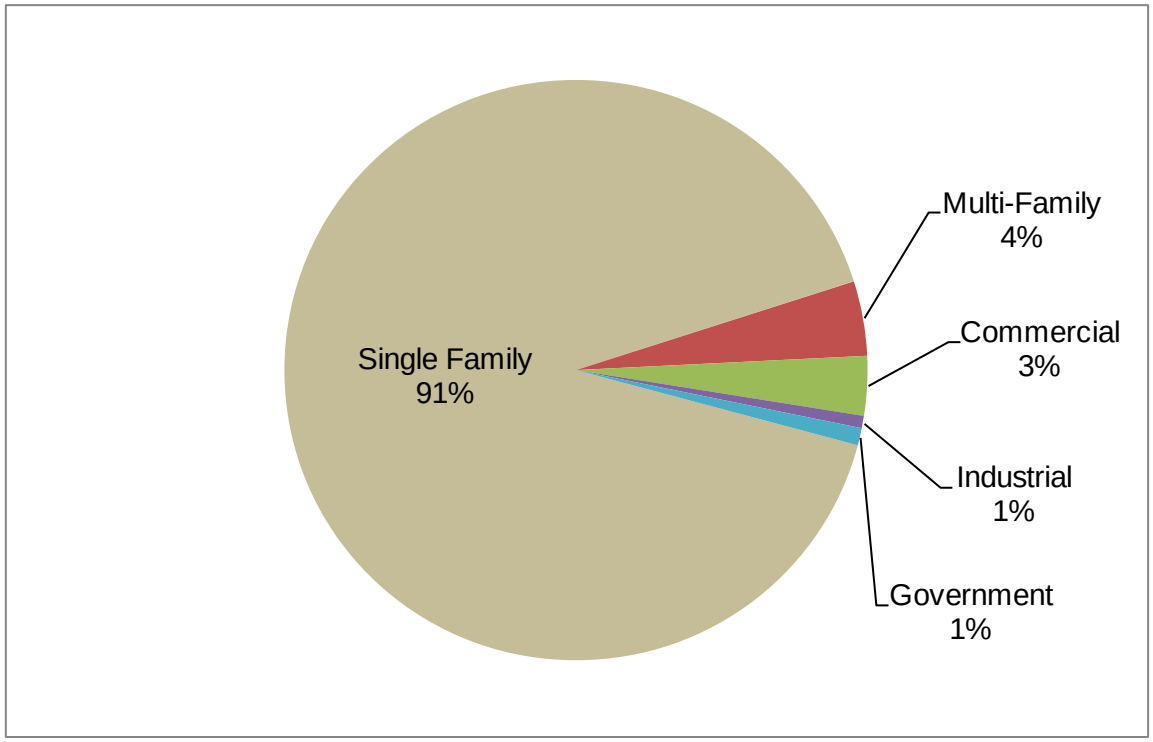


**Figure 5.1 – Breakdown of Accounts by Account Type**

As shown in Figure 5.1, residential accounts compose the majority of the accounts, with single family composing 91 percent and multi-family composing 4 percent of total account distribution. Commercial represents 3 percent, while Industrial and Government each represent 1 percent respectively. These percentages were used to project the number of accounts by type shown in Table 5.3. The total number of accounts for each projected year was determined by using the average account-to-population ratio. This average ratio was applied to the projected population for all future years, followed by using the account type breakdown listed above to divide the total number of accounts into account types.

Residential water demands account for over 95 percent of the total system demand, while Commercial, Industrial, and Government uses combined comprise only 5 percent of total usage.

### 5.2.2 Historical Water Use

The historical water use since 1995 is listed in Table 5.1 and shown on Figure 5.2. Population is included for the same time period, estimated based on calculations from the number of service connections installed each year.

**Table 5.1 Historical Water Use**

| Year | Potable Water Demand (afy) | Population[(1)] | Per Capita Consumption (gpcd) |
|---|---|---|---|
| 1995 | 20,527 | 100,378 | 183 |
| 1996 | 22,393 | 100,850 | 198 |
| 1997 | 22,662 | 101,342 | 200 |
| 1998 | 20,807 | 100,699 | 184 |
| 1999 | 23,500 | 101,831 | 206 |
| 2000 | 24,306 | 102,437 | 212 |
| 2001 | 22,689 | 103,246 | 196 |
| 2002 | 24,919 | 103,758 | 214 |
| 2003 | 24,020 | 103,990 | 206 |
| 2004 | 23,819 | 104,031 | 204 |
| 2005 | 22,465 | 104,072 | 193 |
| 2006 | 23,174 | 104,188 | 199 |
| 2007 | 24,339 | 104,417 | 208 |
| 2008 | 23,306 | 106,600 | 195 |
| 2009 | 21,453 | 106,364 | 180 |
| **Average** | **22,959** | **103,213** | **199** |

Notes:

(1) Historic population estimates were calculated from the number of service connections installed each year between 1990 and 2009. A benchmark of the year 2009 was used based on census data (USCB, 2000).

As shown in Figure 5.2, the historical water use has varied from year-to-year. Water demands dropped in 2009, most likely due to a combination of factors such as the economic downturn, and water conservation efforts by the District during the recent three year drought.

Another observation that can be made from Table 5.1 is the variation in per capita water demands over time. The continual fluctuations in the District's gallons per acre foot (gpcd) demand demonstrate that individual consumption is more prone to change.

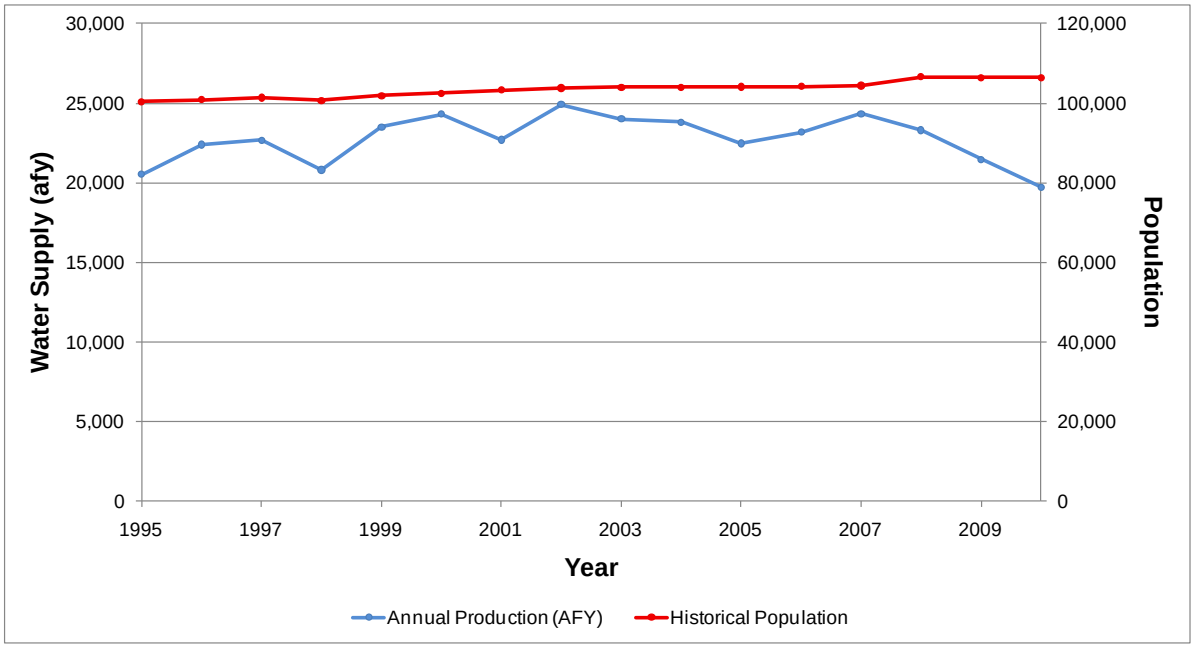


**Figure 5.2 – Production and Population Over Time**

### 5.2.3 Current Water Use

In 2010, the District supplied 19,722 afy, which is equivalent to 18 million gallons per day (mgd). With a historical population of approximately 106,000, determined by historic population methodology outlined in Chapter 2, this water use equates to a historic average per capita consumption of 166 gallons per capita per day (gpcd).

While the water demand and population data in Table 5.1 show growth occurring within the District, of equal importance is the per capita consumption within the region. The per capita consumption is an indication of an average amount of water consumed per person per day for a calendar year.

The historical per capita consumption rate was used in combination with the population projections from SCAG (see Chapter 2) to estimate the District's future water demands. These demand requirements were then used to evaluate the adequacy of existing supply sources.

Overall, the population and water demand for the District have both grown steadily, if slowly, although demands have tapered slightly in the most recent years due to the drought and the economy. This contrasts with the District's per capita consumption, which has fluctuated continuously for the entire 15 year period. This fluctuation indicates that, while population within the region has been consistent, average yearly water consumption for each person living in the District's service area has varied.

### 5.2.4 Projected Water Use

Based on the future trends in population obtained from SCAG and historical baseline per capita water consumption rates, the District's future water requirements were estimated and are summarized in Table 5.2 and Figure 5.3. The per capita water consumption rates were determined by establishing consumption targets to meet future water conservation requirements, discussed below.

**Table 5.2 Demand Projections**

| Year | Demand (afy) | Population[(1)] | Per Capita Consumption (gpcd)[(2)] |
|---|---|---|---|
| 2010 | 25,911 | 113,236 | 204 |
| 2015 | 24,242 | 117,715 | 184 |
| 2020 | 22,319 | 121,926 | 163 |
| 2025 | 23,075 | 126,057 | 163 |
| 2030 | 23,806 | 130,050 | 163 |
| 2035 | 24,496 | 133,816 | 163 |

Notes:
1. Population Projections from Table 2.2. Per capita projections from Chapter 6
2. The 2010 gpcd of 204 is a projected value and not the actual gpcd. This value is used for conservative planning purposes and to remain consistent with future demand projection methodology

Total projected demand is anticipated to undergo a gradual decrease until the year 2020, and then resume increasing in a manner similar to the last 20 years, driven by population growth. This demand projection is based on per capita consumption rates which have been specifically calculated to satisfy the water conservation targets laid out in the Water Conservation Act of 2009. Put simply, the projected per capita consumption values will allow the District to realize a 20 percent reduction in water use in the 2020 based on historical trends. More details regarding the per capita consumption rates presented in Table 5.2 can be found in Chapter 6.

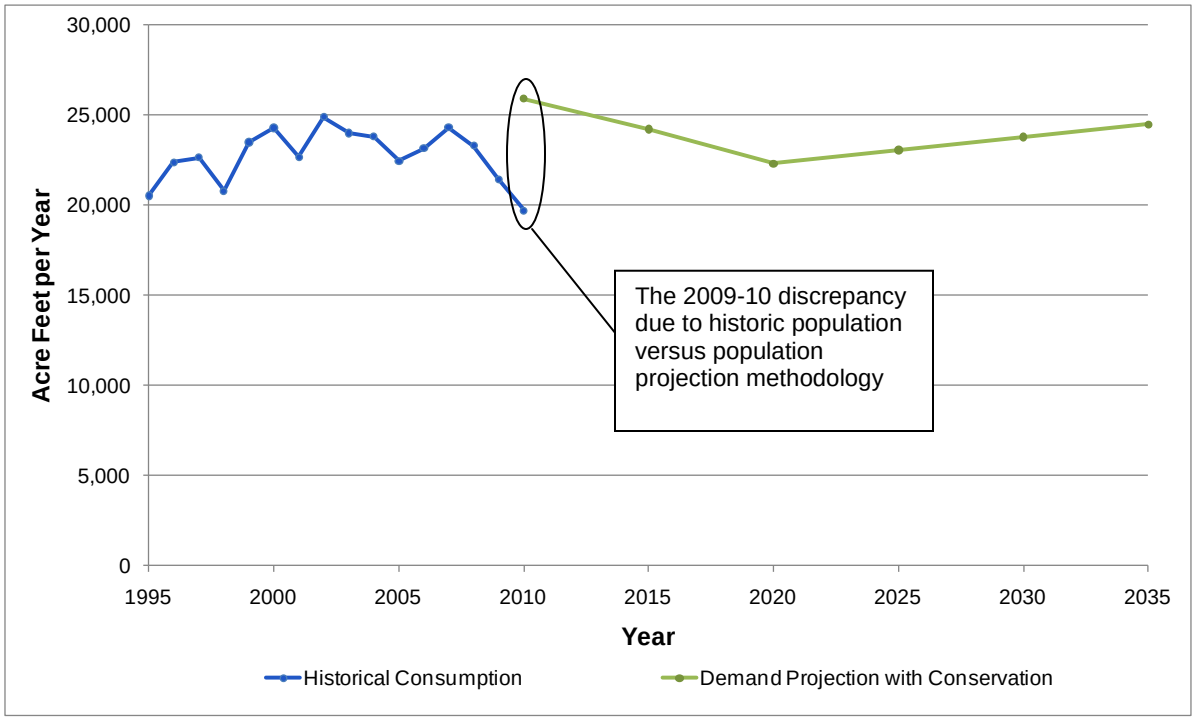


**Figure 5.3 – Past, Current, and Projected Water Use**

Another key assumption underlying future demand values is the 2010 starting point for the projection. The year 2009 saw a decrease in volume of water consumed by both the region as a whole, as well as in per capita rates. Demand continued to decrease to the 2010 value of 19,722 af, shown in Figure 5.3 as the lower of the two 2010 values. The demand projections were derived from the population projections presented in Chapter 2 and the per capita consumption targets listed in Table 5.2 and further explained in Chapter 6 under "Method 1." The actual water demand for 2010, shown in Figure 5.3, is different from the 2010 projection due to decreased demand from water conservation and other consumption factors.

It was decided to use the maximum 10-year average of years 1999 through 2008, per capita water use (204 gpcd) as a basis for future demand projections as required for the development of the conservation target development described in Chapter 6. Based on the per capita consumption value of 204 gpcd, the total 2010 consumption was estimated at approximately 26,000 af.

## 5.3 WATER USAGE BY CLASSIFICATION

The 2005, current, and projected water deliveries by sector are summarized in Table 5.3. As shown, the District does not have any unmetered accounts and is planning to continue installing meters for all future accounts.

Recent consumption versus production statistics indicate that the District has an overall water loss factor of 4 percent. This is relatively low compared to the 5 to 10 percent water loss typically observed in most southern California agencies.

The District wholesales water to Suburban Water Systems (SWS). The volume wholesaled does not represent a significant component of SWS's water sources. Also, SWS does not represent a significant portion of the District's demands.

**Table 5.3 Water Demand Projections by Use Type**

| Use | 2005 | | 2010 | | 2015 | | 2020 | |
|---|---|---|---|---|---|---|---|---|
| | No. of accounts[1] | Demand (afy) | No. of accounts[1] | Demand (afy) | No. of accounts[1] | Demand (afy) | No. of accounts[1] | Demand (afy) |
| Single Family | 23,830 | 15,595 | 24,042 | 22,612 | 26,594 | 16,725 | 27,545 | 15,398 |
| Multi-family | 1,035 | 2,025 | 1,093 | 1,031 | 1,213 | 3,030 | 1,256 | 2,789 |
| Commercial | 786 | 1,892 | 867 | 821 | 966 | 1,994 | 1,000 | 1,836 |
| Industrial | 167 | 461 | 177 | 169 | 199 | 406 | 206 | 374 |
| Government | 237 | 1,425 | 259 | 241 | 283 | 1,118 | 293 | 1,030 |
| System Losses[2] | | 299 | | 1,036 | | 970 | | 893 |
| Total | 26,055 | 23,250 | 26,438 | 25,911 | 29,254 | 24,242 | 30,301 | 22,319 |

Notes:

(1) Account breakdown for 2005 and 2010 based in historic data, 2015 through 2025 breakdown based on average 2009 and 2010 account breakdown

(2) System losses for 2005 based on historic use, 2010 through 2035 assumed to be 4%

**Table 5.3 Water Demand Projections by Use Type (Continued)**

| Use | 2025 | | 2030 | | 2035 | |
|---|---|---|---|---|---|---|
| | No. of accounts[1] | Demand (afy) | No. of accounts[1] | Demand (afy) | No. of accounts[1] | Demand (afy) |
| Single Family | 28,478 | 15,920 | 29,380 | 16,424 | 30,231 | 16,900 |
| Multi-family | 1,299 | 2,884 | 1,340 | 2,975 | 1,379 | 3,061 |
| Commercial | 1,034 | 1,898 | 1,067 | 1,958 | 1,098 | 2,015 |
| Industrial | 213 | 386 | 219 | 399 | 226 | 410 |
| Government | 303 | 1,065 | 313 | 1,098 | 322 | 1,130 |
| System Losses[2] | | 923 | | 952 | | 980 |
| Total | 31,327 | 23,075 | 32,320 | 23,806 | 33,256 | 24,496 |

Notes: (see above)

## 5.4 LOW INCOME HOUSING

The UWMPA requires that the UWMP identify planned low-income housing developments within the agency's service area and develop demand projections for those units.

> 10631.1(a). The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier

As shown in Table 5.4, projected low-income water demand data was not available for the District as it overlays multiple cities and portions of Los Angeles County. As some of the City's general plans do not contain information on low-income housing or do not specify the location of these units, it was not possible to summarize the total of low-income housing units and the associated demand that fall within the District's service area.

**Table 5.4 Low Income Projected Water Demands**

| | Demand (afy) | | | | |
|---|---|---|---|---|---|
| | **2015** | **2020** | **2025** | **2030** | **2035** |
| Low Income Housing(1) | n/a | n/a | n/a | n/a | n/a |

Notes:
(1) Data not available

However, the District did provide information regarding their low-income water rate programs. Currently, there are 557 accounts within the District that qualify for this low-income program, which equates to about 2 percent of the District's 26,438 active water accounts. Based on the 2010 water usage of 19,722 afy, it is estimated that these accounts have a combined approximate water use of 400 afy. As the low-income water rate program may not include all low-income housing units and may include customers outside low-income housing units, this demand is solely included to provide some indication on low-income demographics within the District's service area.

## 5.5 DEMAND PROJECTIONS WITH WATER CONSERVATION

The projected water demands with and without the target water conservation discussed in Chapter 6 are listed in Table 5.5 and are graphically depicted in Figure 5.4. As explained above, while actual 2010 usage was 19,722 af, the year 2010 demand projections are simply based on the baseline per-capita consumption of 204 gpcd.

| Table 5.5 Demand Projections | | | |
|---|---|---|---|
| Year | SCAG Population[(1)] | Water Demand without Conservation (afy) | Water Demand with Conservation (afy) |
| 2010 | 113,236 | 25,911 | 25,911 |
| 2015 | 117,715 | 26,936 | 24,242 |
| 2020 | 121,926 | 27,899 | 22,319 |
| 2025 | 126,057 | 28,844 | 23,075 |
| 2030 | 130,050 | 29,758 | 23,806 |
| 2035 | 133,816 | 30,620 | 24,496 |

Notes:
(1) Population Projections from Table 2.2.
(2) Demand projections include recycled water

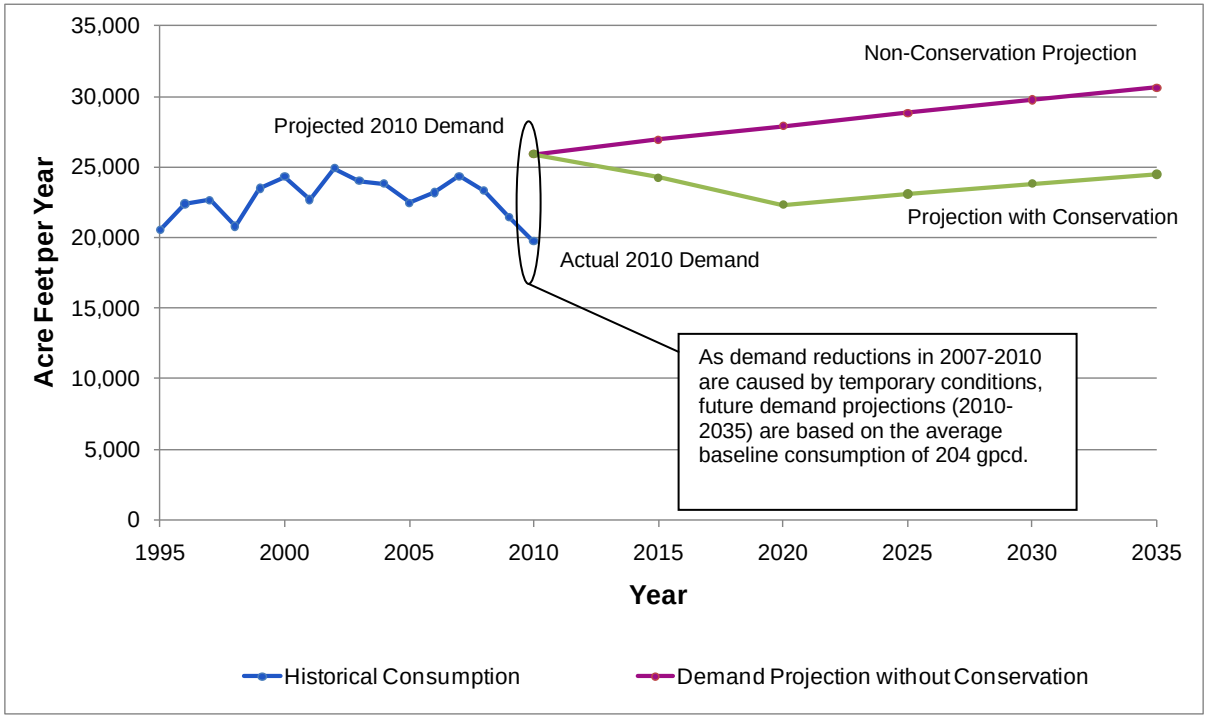


**Figure 5.4 Projected Water Demands with and without Conservation**

As shown in Figure 5.4, the water conservation requirements of the Water Conservation Act of 2009 reduce the projected water demand for year 2020 from 27,899 afy to 22,319 afy, a decrease of 5,580 af.

**Chapter 6**

# WATER CONSERVATION

The UWMPA requires the UWMP involve a discussion of the agency's water conservation measures. This includes an overview of the supplier's BMPs as well as a discussion of how the supplier intends to meet the water conservation targets established by SBx7-7.

> 10608.20. (a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis. (2) It is the intent of the Legislature that the urban water use targets described in subdivision (a) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020

## 6.1 WATER CONSERVATION

### 6.1.1 Water Conservation Target Methods per SBx7-7

The Water Conservation Act of 2009 (SBx7-7) is the new law governing water conservation in California that was enacted November 2009. This law requires that all water suppliers increase water use efficiency with the overall goal to decrease per capita consumption within the state by 20 percent by year 2020. DWR provided four different methods to establish water conservation targets. These four methods can be summarized as follows.

- **Method 1 – Baseline Reduction Method.** The 2020 water conservation target of this method is defined as a 20 percent reduction of average per capita demand during a 10-year continuous baseline period that should end between 2005 and 2010.

- **Method 2 – Efficiency Standard Method.** The 2020 water conservation target of this method is based on calculating efficiency standards for indoor use separately from outdoor use for residential sectors and an overall reduction of 10 percent for commercial, industrial, and institutional (CII) sectors. The aggregated total of the efficiency standards in each area is then used to create a conservation target.

- **Method 3 – Hydrologic Region Method.** This method uses the ten regional urban water use targets for the state. Based on the water supplier's location within one of these regions, a static water use conservation target for both 2015 and 2020 is assigned.

- **Method 4 – BMP-based Method.** This method uses previous BMPs of a supplier in order to establish a conservation target for 2020. Depending on how aggressively the water supplier has pursued water reduction and conservation in the past, a new conservation target for 2020 will be assigned.

### 6.1.2 Method 1

Method 1 establishes baseline water consumption in gpcd based on historical population and historical demand numbers. Any 10-year consecutive period between 1995 and 2010 (but it cannot end before December 31, 2004) can be selected to establish the baseline per capita demand for the water supplier using the average per capita consumption in gpcd from that 10-year period. If an agency uses 10 percent or more recycled water in year 2008, the baseline value can also be determined with a 15-year consecutive period between 1990 and 2010. Since the District did not utilize recycled water for more than 10 percent of their 2008 demand, the baseline period must be 10 years in length and end between 2005 and 2010.

The baseline value is then reduced by twenty percent to determine the year 2020 conservation target. The intermediate target for year 2015 is the mid-point value between the baseline and year 2010 target values.

In addition to the 10-year baseline period, a 5-year period needs to be selected in any year ending no earlier than 2007 to determine the minimum required reduction in water use. The selected 10-year and 5-year base period ranges are summarized in Table 6.1.

**Table 6.1 Base Period Ranges**

| Base | Parameter | Value | Units |
|---|---|---|---|
| Water Deliveries | 2008 total water deliveries | 23,306 | af |
| | 2008 total volume of delivered recycled water | 2,026 | af |
| | 2008 recycled water as a percent of total deliveries | 8.7 | % |
| 10-year Base Period | Number of years in base period | 10 | years |
| | Year beginning base period range | 1999 | |
| | Year ending base period range | 2008 | |
| 5-year Base Period | Number of years in base period | 5 | years |
| | Year beginning base period range | 2003 | |
| | Year ending base period range | 2007 | |

Table 6.1 shows the characteristics of the 10- and 5-year periods selected as the baselines for the District in meeting the Water Conservation Act of 2009. The District's historical water consumption for the period 1995 through 2010 is shown in Figure 6.1. This figure also depicts the minimum, average, and maximum 10-year baseline values. As shown, the 10-year period with the highest baseline consumption starts in 1999 and ends in 2008.

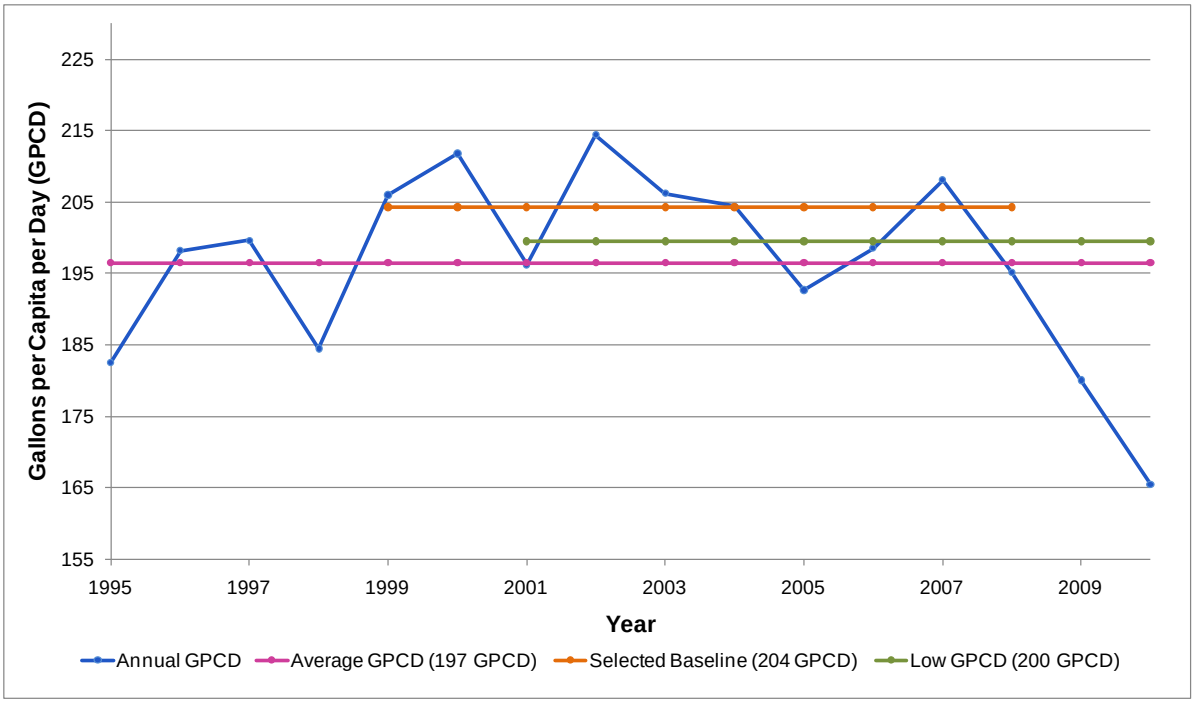


**Figure 6.1 Historical Consumption**

As shown in Figure 6.1, although the yearly per capita demand varies significantly over the historical period between 1995 and 2010, the high average, low average, and 16-year average are all relatively close in value. Although more recent per capita demand values show a decline compared to previous years, this is partly due to the recent drought reflecting more aggressive conservation outreach efforts by the District.

**Table 6.2 Base Daily Per Capita Water Use – 10 Year Range**

| Base Period Year | | Distribution System Population | Daily System Gross Water Use (mgd) | Annual Daily Per Capita Water Use (gpcd) |
|---|---|---|---|---|
| Sequence Year | Calendar Year | | | |
| Year 1 | 1999 | 101,831 | 21.0 | 206 |
| Year 2 | 2000 | 102,437 | 21.7 | 212 |
| Year 3 | 2001 | 103,246 | 20.3 | 196 |
| Year 4 | 2002 | 103,758 | 22.2 | 214 |
| Year 5 | 2003 | 103,990 | 21.4 | 206 |
| Year 6 | 2004 | 104,031 | 21.3 | 204 |
| Year 7 | 2005 | 104,072 | 20.1 | 193 |
| Year 8 | 2006 | 104,188 | 20.7 | 199 |
| Year 9 | 2007 | 104,417 | 21.7 | 208 |
| Year 10 | 2008 | 106,600 | 20.8 | 195 |
| **Average** | **n/a** | **103,857** | **21.1** | **204** |

Table 6.2 shows District population, total volume of consumption, and per capita consumption of the selected 10-year baseline period. The average per capita consumption during this period was 204 gpcd. Based on Method 1, a twenty percent reduction from this baseline period determines the District's 2020 conservation target to be 163 gpcd.

Table 6.3 shows the population, total volume of consumption, and the per capita consumption of a five year baseline period. The five-year baseline value is used to determine the minimum required reduction in water use.

**Table 6.3 Base Daily Per Capita Water Use – 5 Year Range**

| Base Period Year | | Distribution System Population | Daily System Gross Water Use (mgd) | Annual Daily Per Capita Water Use (gpcd) |
|---|---|---|---|---|
| Sequence Year | Calendar Year | | | |
| Year 1 | 2003 | 103,990 | 21.4 | 206 |
| Year 2 | 2004 | 104,031 | 21.3 | 204 |
| Year 3 | 2005 | 104,072 | 20.1 | 193 |
| Year 4 | 2006 | 104,188 | 20.7 | 199 |
| Year 5 | 2007 | 104,417 | 21.7 | 208 |
| **Average** | | **104,140** | **21.0** | **202** |

As shown in Table 6.3, the average consumption in the period 2003 to 2007 was 202 gpcd. The minimum per capita consumption for year 2020 is defined as 95 percent of this value, reflecting a minimum water conservation of five percent. This equates to a minimum water conservation target of 192 gpcd.

As the water conservation target from the 10-year baseline period (163 gpcd) is lower than the minimum water conservation target (192 gpcd), the District's water conservation targets are as follows:

- Year 2015 Target: 184 gpcd (10 percent reduction)
- Year 2020 Target: 163 gpcd (20 percent reduction)

### 6.1.3 Method 2

Method 2 uses performance standards for both indoor and outdoor usage to establish the supplier's 2020 water conservation target. Method 2 consists of a series of four steps and utilizes actual water use data and estimates from the water supplier. First, the method assumes a standard statewide indoor use target of 55 gpcd. Then, the landscaped area for the supplier's entire service area is determined. Commercial, institutional, and industrial water use is accounted for separately using historical billing data. The performance standards for outdoor landscape irrigation, based on acreage, and commercial, institution, and industrial use, based on demands, are then applied to those totals. Finally, the

performance standards for all three sectors are added together to determine the Method 3 2020 conservation target.

There is insufficient data to calculate Method 2 for the District. Principally, the effort associated with digitizing or surveying the amount of irrigated landscape within the District's service area would be a significant effort.

### 6.1.4 Method 3

The State's 20 by 2020 water conservation plan has identified specific urban water use targets for 2015 and 2020 for each of the ten hydrologic regions shown in Figure 6.2. The District falls in Hydrologic Region 4 (South Coast) which has a target use of 142 gpcd for year 2020.


**Figure 6.2 Hydrologic Regions**

The District's water conservation targets using Method 3 are as follows:

- Year 2015 Target: 173 gpcd (15 percent reduction)
- Year 2020 Target: 142 gpcd (30 percent reduction)

### 6.1.5 Method 4

Method 4 uses the supplier's BMP reports as a guide to set the 2020 conservation target. The intent behind Method 4 is to use the BMP reports to account for what water conserving measures the supplier has already taken in order to set a more accurate and realistic target for the future and take into consideration the supplier's previous water conservation efforts.

**Provisional Method 4**

Method 4 is based on the District's BMP efforts and has been released as a provisional method, subject to later revisions during the 2015 UWMP cycle.

The methodology for the provisional method relies on the base daily per capita use in 2000 and reduction in the three urban use sectors:

- Residential indoor;
- CII; and
- Landscape use and water loss.

A discussion of each of these components, and the calculated savings in each of these sectors is included below.

***Residential Indoor Savings***

Since indoor and outdoor water use is delivered through a single meter, an assumption of 70 gpcd was provided by DWR for standard residential indoor water use.

To determine indoor residential savings, Method 4 outlines two methodologies. A (BMP) calculator has been developed to sum the savings for four conservation elements including single and multi-family residential housing toilets, residential washers, and showerheads. Based on the draft provisional method, this value is 15.2 gpcd.

***Commercial, Industrial, and Institutional Savings***

Baseline CII water can be easily established for the District since all commercial, industrial, and institutional connections were metered in 2000. The calculated baseline for CII use (over the same 1999 through 2008 period) was 25 gpcd.

The provisional method estimates a default value for CII savings of 10 percent of the per capita CII demand. The CII water savings are therefore 2.5 gpcd.

***Landscape and Water Loss Savings***

The landscape and water loss water use is determined by subtracting the default indoor water use of 70 gpcd and CII water use of 25 gpcd from the calculated baseline per capita

use of 204. Based on calculated baseline per capita water use, the landscape and water loss use is 109 gpcd.

The draft provisional method estimates a default value for landscape and water loss savings of 21.6 percent. The landscape and water loss savings are therefore 23.5 gpcd.

***Metered Savings***

Since all connections within the District are currently metered, no water savings are associated with metering unmetered accounts.

***Summary***

Based on the steps above, the total water savings is estimated at 41 gpcd. When compared with the baseline demand of 204 gpcd, this would result in a water conservation target of 163 gpcd. A summary of baseline water use by sector and individual savings calculated using Method 4 is included in Table 6.4.

**Table 6.4 Method 4 Target Determination Summary**

| Baseline Water Use (gpcd) | | | | Water Savings (gpcd) | | | | |
|---|---|---|---|---|---|---|---|---|
| Residential Indoor[(1)] | CII[(2)] | Landscape/ Water Loss | Total | Residential /Indoor[(3)] | CII[(4)] | Landscape Water | Metered | Total |
| 70 | 25 | 109 | 204 | -15.2 | -2.5 | -23.5 | 0.0 | 162.8 |

Notes:
(1) Assumed value based on guidelines in provisional Method 4.
(2) Source: 1999-2008 BMP reports.
(3) Savings based on DWR indoor residential savings calculator.
(4) CII water savings of 10 percent based on guidelines in provisional Method 4.
(5) Landscape and water loss savings of 21.6 percent based on guidelines in provisional Method 4.

## 6.1.6 Recommended Method

The water conservation targets per method as developed with data provided by the District are summarized in Table 6.5. As shown, Method 1 and Method 4 result in the same targets. However, Method 1 will allow the District the greatest freedom in reaching these targets.

**Table 6.5 Conservation Method Overview**

| Conservation Calculation | Conservation Target (gpcd) | | Reduction by 2020 | |
|---|---|---|---|---|
| | Year 2015 | Year 2020 | From Baseline[(1)] | From 2009 Usage[(2)] |
| Method 1 | 184 | 163 | 20% | 9% |
| Method 2 | n/a | n/a | n/a | n/a |
| Method 3 | 173 | 142 | 30% | 21% |
| Method 4 | 184 | 163 | 20% | 9% |

Notes:
1) Baseline consumption is 204 gpcd
2) 2009 consumption is 180 gpcd

Based on an evaluation of each method as described above and discussions with District staff, it was decided to use Method 1 for the 2010 UWMP. The following section discusses the various BMPs available to the District to achieve this reduction in water use.

### 6.1.7 Demand Projections with Water Conservation

Table 6.6 presents District demand projections with and without water conservation targets. The demand projections in afy were derived from the population projections presented in Chapter 2 and the per capita consumption targets described above. Demands shown for the year 2010 were based on a per capita consumption of 204 gpcd which reflect historical trends over the last several years. The actual water demand in 2010 was lower due to water conservation as well as weather and economic factors.

Year 2015 serves as an interim point, with projected per capita consumption reduced to meet the 2015 target.

**Table 6.6 Demand Projections**

| Year | Water Demand without Conservation (afy) | Water Demand with Target Conservation (afy) |
|---|---|---|
| 2010 | 25,911 | 25,911 |
| 2015 | 26,936 | 24,242 |
| 2020 | 27,899 | 22,319 |
| 2025 | 28,844 | 23,075 |
| 2030 | 29,758 | 23,806 |
| 2035 | 30,620 | 24,496 |

Notes:
(1) Population Projections are taken from Table 2.2.
(2) Non-conservation projections are based on population growth combined with baseline consumption of 204 gpcd, whereas conservation projections are based on 2020 conservation target consumption of 163 gpcd

As shown in Table 6.6 and graphically in Figure 6.3, water conservation requirements of SBx7-7 reduce projected water demand for year 2020 from 27,899 afy to 22,319 afy. The

following section discusses the various BMPs available for the District's to achieve this reduction in water use.

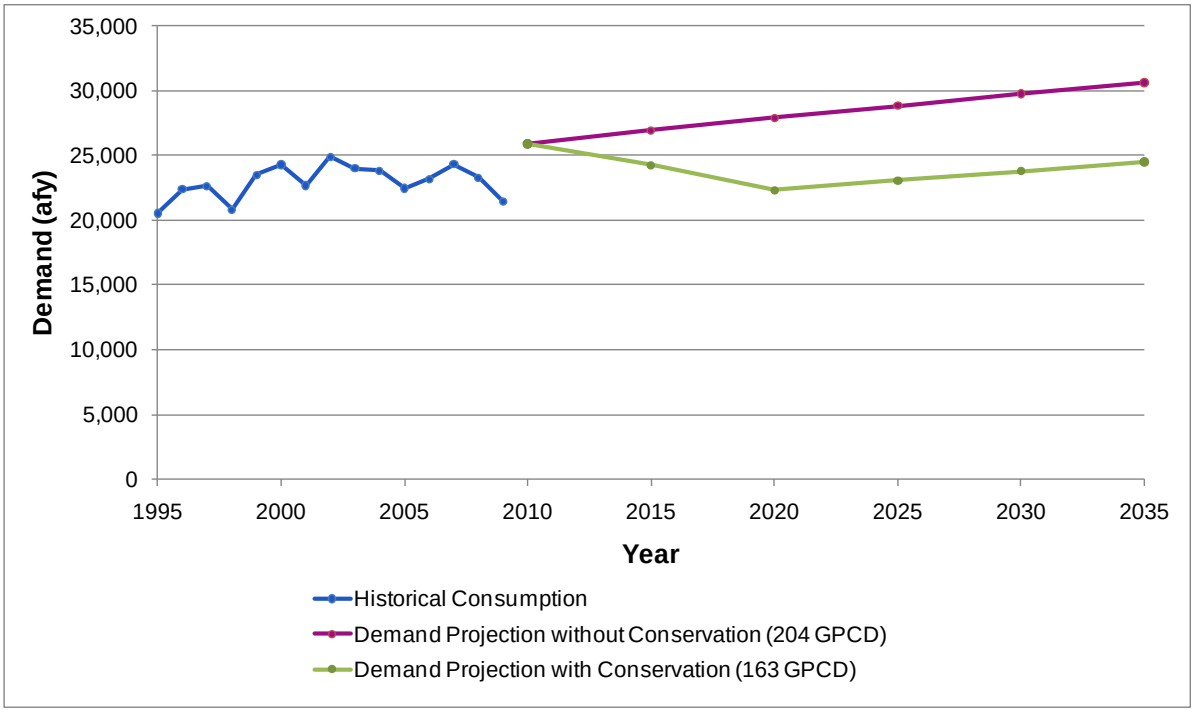


**Figure 6.3 Projected Water Demands with and without Conservation**

## 6.2 BEST MANAGEMENT PRACTICES

The District is a signatory to the Memorandum of Understanding regarding Urban Water Conservation in California (MOU) and is therefore a member of the California Urban Water Conservation Council (CUWCC). The District became a signatory to the MOU in 1997 and submits annual reports outlining progress towards implementing the 14 BMPs in the MOU. BMPs are conservation practices that have been identified by the CUWWC: conferences, BMP workshops, free publications, research regarding water management practices, leadership on water legislation and networking with other agencies and special interest groups, for example.

The District has, in good faith, tried to address, or plans to address, all of the BMP targets listed in the CUWCC MOU except where mentioned below. BMP Number 10 applies only to wholesale agencies and is not reported in this plan.

BMP signatories can submit their most recent BMP Report with their UWMP to address the urban water conservation requirements specified in the UWMPA. As a member of CUWCC and signatory of its MOU, the District realizes the importance of the BMPs to ensure a reliable future water supply. The District is committed to implementing water conservation and water recycling programs to maximize sustainability in meeting future water needs for its customers.

The District's previous UWMP provided information regarding the District's conservation measures already in place and those that would improve the efficiency of water use within the District.

> 10631 (F) Provide a description of the supplier's water demand management measures. This description shall include all of the following:
>
> (1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
>
> (A) Water survey programs for single-family residential and multifamily residential customers.
>
> (B) Residential plumbing retrofit.
>
> (C) System water audits, leak detection, and repair.
>
> (D) Metering with commodity rates for all new connections and retrofit of existing connections.
>
> (E) Large landscape conservation programs and incentives.
>
> (F) High-efficiency washing machine rebate programs.
>
> (G) Public information programs.
>
> (H) School education programs.
>
> (I) Conservation programs for commercial, industrial, and institutional accounts.
>
> (J) Wholesale agency programs.
>
> (K) Conservation pricing.
>
> (L) Water conservation coordinator.
>
> (M) Water waste prohibitions.
>
> (N) Residential ultra-low-flush toilet replacement programs.

While the CUWCC has re-classified the BMPs, the numbered classification system will be used in this discussion since the District's efforts have been categorized accordingly.

| Table 6.7 Best Management Practices | | | |
|---|---|---|---|
| **Best Management** | **Implemented** | **Planned for Implementation** | **Not Applicable** |
| BMP 1 - Water Survey Programs | | | ✓ |
| BMP 2 - Residential Plumbing Retrofit | | | ✓ |
| BMP 3 - Water System Audits | ✓ | | |
| BMP 4 - Metering with Commodity Rates | ✓ | | |
| BMP 5 - Landscape Irrigation Programs | ✓ | | |
| BMP 6 - Washing Machine Rebate Program | ✓ | | |
| BMP 7 - Public Information Program | ✓ | | |
| BMP 8 - School Education Program | ✓ | | |
| BMP 9 - Commercial, Industrial, and Institutional Conservation Programs | ✓ | | |
| BMP 10 - Wholesale Agency Programs | | | ✓ |
| BMP 11 - Conservation Pricing | ✓ | | |
| BMP 12 - Water Conservation Coordinator | ✓ | | |
| BMP 13 - Water Waste Prohibition | ✓ | | |
| BMP 14 - Ultra Low Flush Toilet Replacement | ✓ | | |

### 6.2.1 BMP 1 - WATER SURVEY PROGRAMS

This program consists of offering water audits to single family and multi-family residential customers. Audits include reviewing water usage history with the customer, identifying leaks inside and outside the home, and recommending improvements.

The District filed a cost-effectiveness analysis for exemption from this BMP. The cost-effectiveness analysis was submitted on November 29, 2004.

### 6.2.2 BMP 2 - RESIDENTIAL PLUMBING RETROFIT

This program traditionally consists of installing physical devices to reduce the amount of water used or to limit the amount of water that can be served to the customer. In accordance with State law, low-flow fixtures have been required on all new construction since 1978. In addition, State legislation enacted in 1990 requires all new buildings after January 1, 1992 to install Ultra-Low-Flush Toilets (ULFT).

Based on information contained in the AWWARF Residential End Uses of Water Study, the District believes it has already met the coverage requirements for this BMP. Both single family households and multi-family households are reportedly 95 percent saturated with low flow devices. This indicates an average showerhead flow of 2.09 gallons per minute (gpm)

for homes within the District's service area. However, additional study may be necessary to fully confirm this. The District is also in the process of conducting a Conservation Master Plan which will evaluate if further distributions will reduce water demand in the District.

### 6.2.3 BMP 3 - SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR

A water audit is a process of accounting for water use throughout a water system in order to quantify unmetered water usage. Unaccounted-for water is the difference between metered production and metered usage on a system-wide basis.

2009 records show a 3.6 percent unaccounted-for water loss of the District's water production. This is relatively low compared to the typical range of 5 to 10 percent experienced by most agencies in Southern California. For this reason, the District does not provide a comprehensive system leak detection program.

### 6.2.4 BMP 4 - METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

This BMP requires water meters for all new connections and billing by volume of use, as well as establishment of a program for retrofitting any existing unmetered connections. All connections within the District are metered and customers are billed according to the amount of water used. As the District continues to install meters at all its new connections, this program will not provide foreseeable water conservation opportunities.

### 6.2.5 BMP 5 - LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES

This BMP calls for agencies to start assigning reference ETo based water budgets to accounts with dedicated irrigation meters and to provide water use audits to accounts with mixed use meters.

Based on the historical billing records, the District currently serves approximately 260 accounts with dedicated irrigation meters that have a combined annual water demand of approximately 1,100 afy. This equates to an average water use of 4 afy per landscape meter. Assuming that these landscape customers could save 25 percent of their water use, or 1 afy, through more efficient watering techniques and $ET_o$ sensors, the District could potentially save approximately 130 afy by implementing landscape conservation programs with 50 percent of landscaping customers. This would result in 2 percent of the 5,580 af reduction needed in 2020.

Although a detailed water conservation analysis would be required to obtain a more accurate savings estimate, it can be concluded that this BMP has the potential to contribute significantly towards achieving the District's water conservation goals.

### 6.2.6 BMP 6 - HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAM

This program generally provides financial incentives (rebate offers) to qualifying customers who install high-efficiency washing machines in their homes.

These machines typically use 15 to 25 gallons less water per load than typical washers. If the District were to achieve 60 percent saturation of residential customers, the District would potentially add approximately 15,000 HECWs. At an average of 1 load per day and 20 gallons of water savings per load, this program could potentially contribute over 336 afy of conservation, or 6 percent of the 5,580 af reduction in 2020.

### 6.2.7 BMP 7 - PUBLIC INFORMATION PROGRAMS

This program consists of distributing information to the public through a variety of methods including brochures, radio, television, school presentations and videos, and websites. The District maintains a newsletter which is distributed regularly and often touches on water issues. The District has also distributed water information in its monthly bills, at special events, and on its homepage.

### 6.2.8 BMP 8 - SCHOOL EDUCATION PROGRAM

This BMP requires water suppliers to implement a school education program that includes providing educational materials and instructional assistance.

School education programs for this period include the National Theatre for Children performances at 5 schools, reaching a total of 2850 K-5th Grade students. Grade appropriate materials are also provided. Annual Third-Fifth Grade poster contest reach a total of 805 students in 30 classes. A High School Essay Contest with 16 entries from four high schools is also part of the education program.

### 6.2.9 BMP 9 - CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL ACCOUNTS

The District targets commercial, industrial, and institutional water accounts with a high monthly consumption for water audits. Such programs typically involve the implementation of turf fields, smart irrigation timers, and industrial process water use reductions. Currently, the District has approximately 1,050 CII accounts. Assuming that the District has the potential to implement 100 new CII programs by year 2020 and that each program would, on average, save 1 afy per program, the total savings of the CII program would generate approximately 100 afy of water conservation, which is about 2 percent of the 5,580 afy water conservation goal for year 2020.

### 6.2.10 BMP 10 - WHOLESALE AGENCY PROGRAMS

This BMP applies to wholesale agencies and defines a wholesaler's role in terms of financial, technical, and programmatic assistance to its retail agencies implementing BMPs.

The District wholesales a small portion of their supplies to retailer 'Suburban Water Systems' (SWS). The conservation programs available to SWS customers are the same regional programs as utilized by the District that are made available through Metropolitan Water District of Southern California (MWDSC) and Three Valleys Municipal Water District (TVMWD).

### 6.2.11 BMP 11 - CONSERVATION PRICING

The District implements a tiered rate structure to single family connections which applies a variable rate to water use per unit (100 cf). Customers using 12 or less units pay $1.75 per unit while customers using 13 or more units pay $2.19 per unit. This charge is in addition to a flat monthly charge based on meter size, as well as an additional per unit charge of $0.00, $0.18, or $0.33 determined by if the customer is in pumping zone 1, 2, or 3 respectively.

The District applies a similar rate to multi-family connections at $2.23 per unit, regardless of units pumped, in addition to the flat monthly rate and pumping zone surcharge. Commercial and Industrial users use the same rate structure as mutli-family users, but the per unit charge is $2.34.

A customer using a recycled water meter pays $1.49 per unit, regardless of number of units pumped. No pumping zone surcharge is assessed, although there is still a base rate depending on the meter size.

The LACSD also provides a conservation based rate structure for sewer service within the District.

### 6.2.12 BMP 12 - WATER CONSERVATION COORDINATOR

Existing full time District staff currently handles the duties required of a Conservation Coordinator in conjunction with their other duties.

### 6.2.13 BMP 13 - WATER WASTE PROHIBITION

The District has implemented municipal code specifically to address water waste. These prohibitions are part of the water shortage contingency plan, and are further discussed in Chapter 8.

### 6.2.14 BMP 14 - RESIDENTIAL ULTRA-LOW-FLUSH TOILET REPLACEMENT PROGRAMS

State legislation requires the installation of efficient plumbing in new construction and, effective in 1994, requires that only ULFTs be sold in California. There have been 5,669

ULFTs and 1,984 HETs installed through this program in the District since the program began. Assuming three people per household, five flushes per person per day, and one gallon savings per flush, this has resulted in a water savings of approximately 15 gpd for each household, or 100 afy District wide.

Over time, this program, combined with the natural replacement of toilets with ULFTs, could continue to increase the District's water savings. Upon reaching a theoretical residential market saturation of 50 percent, the District would save approximately 100 afy in addition to what it currently saves through BMP 14. This additional 100 afy would be about 2 percent of the 5,580 afy water conservation goal for year 2020.

## 6.3 WATER CONSERVATION IMPLEMENTATION PLAN

The BMP's currently implemented by the District have been effective in reducing water consumption, but further efforts will need to be made to reach the 2020 water conservation target. The District's historical per capita and future projections are shown in Figure 6.4.

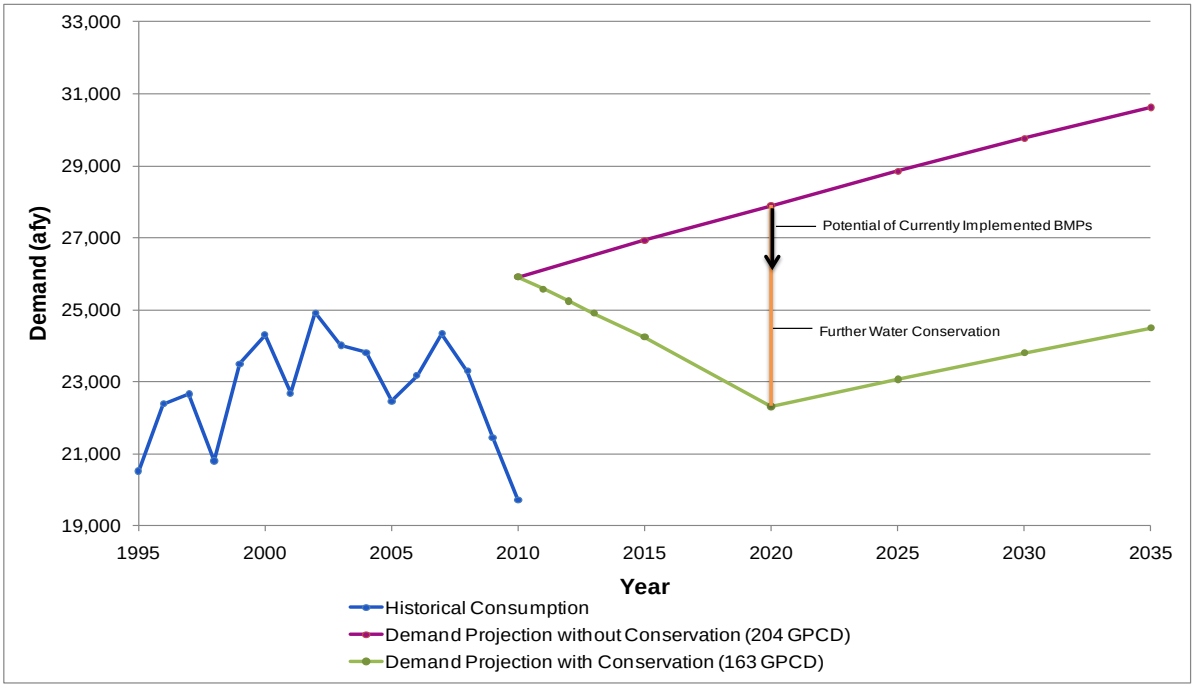


**Figure 6.4 Projected Water Demands with and without Conservation**

The conservation and non-conservation projections reveal conservation savings the District will need to implement by year 2020. The potential effect of current BMP programs by 2020 is shown in Figure 6.4 as a black arrow. This value is listed as potential because it is based on the assumption that currently implemented conservation efforts will continue to be practiced and will have an affect on the District's water consumption. A breakdown of the potential water conservation amounts by BMP as described in the previous sections is graphically presented in Figure 6.5.

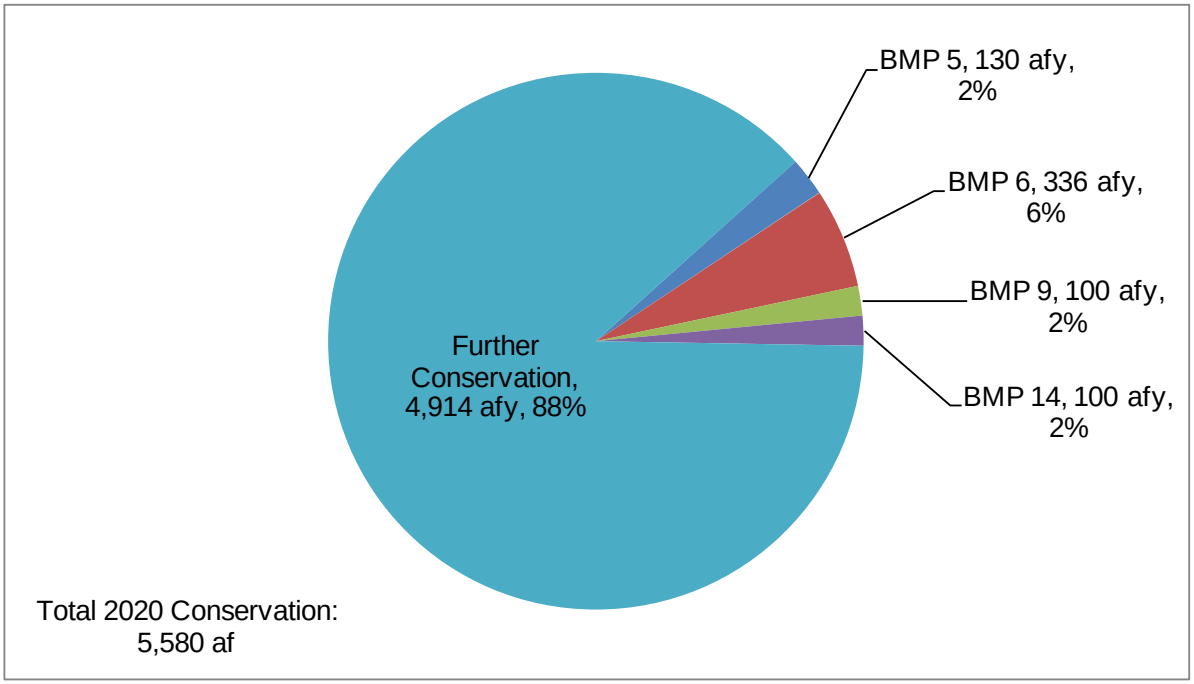


**Figure 6.5 Water Conservation Savings by Method**

As shown in Figure 6.5, current BMP programs will only account for 666 af of the 5,580 afy of conservation needed to reach the 22,319 af target in 2020, which equates to about 12 percent of the total water conservation goal. This figure, however, only accounts for 4 of the 13 BMP's (discounting BMP 10) which the District can use to reduce water consumption. BMP's such as school education, water surveying, and other such methods remain viable strategies to reduce consumption by an additional 4,914 af.

To achieve the necessary amount of water conservation, the District will prioritize its efforts towards expanding its large scale BMP programs to result in large conservation gains. Continued support of residential retrofits is also essential because of the District's largely residential customer base. Finally, although some BMP's do not result in tangible conservation savings, such as school and public education programs, these efforts provide much needed support as the District strives to meet its 2020 conservation target.

**Chapter 7**

# WATER SUPPLY RELIABILITY

## 7.1 INTRODUCTION

The UWMPA requires that the UWMP address the reliability of the agency's water supplies. This includes supplies that are vulnerable to seasonal or climatic variations. The UWMPA also requires that the UWMP include information on the quality of water supplies and how this affects management strategies and supply reliability. In addition, an analysis must be included to address supply availability in a single dry year and in multiple dry years. The relevant sections of the UWMPA are presented below.

> *10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:*
>
> *10631 (c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable.*
>
> *10631 (c) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to replace that source with alternative sources or water demand management measures, to the extent practicable.*
>
> *10631 (c) Provide data for each of the following: (1) An average water year, (2) A single dry water year, (3) Multiple dry water years.*
>
> *10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:*
>
> *10632 (b) An estimate of the minimum water supply available during each of the next three-water years based on the driest three-year historic sequence for the agency's water supply.*
>
> *10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631 and the manner in which water quality affects management strategies and supply reliability.*

This chapter addresses these UWMPA requirements as follows. First, the reliability of the District water supply sources is described. Secondly, planned and potential future supply projects and programs that would impact overall supply availability and reliability are discussed. Subsequently, factors impacting inconsistency of supplies are described. Finally, this chapter concludes with a comparison of supply and demand under normal, single dry year, and multiple dry years.

## 7.2 WATER SUPPLY RELIABILITY

The District faces the same ongoing water supply challenges as other water purveyors in Southern California. Increased environmental regulations and demand for water obtained

outside the region have resulted in changes in delivery patterns and timing of imported water supply availability.

As described in Chapter 3, the District obtains the vast majority of water from MWDSC via TVMWD. In addition, some of the non-potable demands are met with recycled water and to a lesser extent, groundwater.

The following sections summarize supply reliability of District's two main sources of supply, imported water from MWDSC and recycled water.

### 7.2.1 Imported Water Supply Reliability

Because of competing needs and uses associated with these water resources, and because of concerns related to the regional water operations, MWDSC has undertaken a number of planning efforts during the past fifteen years to increase supplies. Some of the most recent documents include the 2010 Integrated Water Resources Plan update, the Water Surplus and Drought Management Plan, Water Supply Allocation Plan, Long-term Conservation Plan, and most recently the 2010 Regional Urban Water Management Plan. These documents were reviewed for the purpose of preparing this 2010 UWMP for the District.

About one third of supplies within the MWDSC service area come from local resources, while the remaining are imported from three sources: the Colorado River (via the Colorado River Aqueduct), the Sacramento-San Joaquin River Delta, and the Owens Valley (via the State Water Project), and the City of Los Angeles' Owens Valley supply (via the Los Angeles Aqueducts). Because the imported water supply reliability for the District is directly tied to the reliability of MWDSC's supply, it is appropriate to use the 2010 Regional UWMP document as a basis for the reliability discussion and assumptions presented in this UWMP.

### 7.2.2 Recycled Water Supply Reliability

As described in Chapter 4, the District obtains recycled water from the Pomona WRP to serve slightly less than 10 percent of its customer demands. Although the treatment plant capacity is rated for 15 mgd, the District is only entitled to one third of this flow, and the actual wastewater flow varies seasonally.

The Pomona WRP recycled water supply is supplemented by groundwater that is pumped from the Puente and Spadra basins. To avoid double counting of supply capacities, the groundwater production amount is stated as zero in subsequent tables, as the total recycled water supply capacity includes the use of the District's four wells.

As the groundwater wells are only used to supplement the system during peak demand conditions, it is assumed that under average day demand conditions, the available wastewater flows are sufficient to meet the recycled water demands. With the ability to provide additional supply from groundwater wells and potable supplements, it can be stated

that the recycled water system has a supply reliability of close to 100 percent.

## 7.3 FUTURE SUPPLY PROJECTS AND PROGRAMS

Since the District purchases most of its water from MWDSC, the projects implemented by MWDSC to secure their water supplies have a direct impact on the District.

### 7.3.1 Projects Planned by MWDSC

As described in its Regional UWMP, MWDSC plans to meet its supply reliability goal through the following activities.

- Surface water storage programs related to the SWP and Colorado River
- Colorado River Water Management Programs
- SWP Management Programs
- Central Valley/SWP Storage and Transfer Programs
- Water Conservation
- Development of Local Supplies
- Water Recycling Projects
- Ocean Desalination programs
- Groundwater banking programs in Southern California Region

The implementation approach and the achievements to-date for each of these programs are discussed in detail in Chapter 3 of the MWDSC Regional UWMP. The projected increase in supply availability due to these programs under average year conditions is summarized in Table 7.1.

**Table 7.1 MWDSC's Current and Planned Supply Programs**

| Program Description | 2015 (afy) | 2020 (afy) | 2025 (afy) | 2030 (afy) | 2035 (afy) |
|---|---|---|---|---|---|
| **Current Programs** | | | | | |
| In-Region Storage and Programs | 685,000 | 931,000 | 1,076,000 | 964,000 | 830,000 |
| California Aqueduct | 1,550,000 | 1,629,000 | 1,763,000 | 1,733,000 | 1,734,000 |
| Colorado River Aqueduct | 1,250,000 | 1,250,000 | 1,250,000 | 1,250,000 | 1,250,000 |
| ***Capability of Current Programs*** | **3,485,000** | **3,810,000** | **4,089,000** | **3,947,000** | **3,814,000** |
| **Under Development** | | | | | |
| In-Region Storage and Programs | 206,000 | 306,000 | 336,000 | 336,000 | 336,000 |
| California Aqueduct | 382,000 | 383,000 | 715,000 | 715,000 | 715,000 |
| Colorado River Aqueduct | 187,000 | 187,000 | 187,000 | 182,000 | 182,000 |
| **Capability of Planned Programs** | **588,000** | **689,000** | **1,051,000** | **1,051,000** | **1,051,000** |
| **Supply Increase** | | | | | |
| Total (afy) | 4,073,000 | 4,499,000 | 5,140,000 | 4,998,000 | 4,865,000 |
| Total (%) | +17% | +18% | +26% | +27% | +28% |

Notes:
Source: Table 2-11 from MWDSC RUWMP (MWDSC, 2010).

As shown in Table 7.1, the planned programs are estimated to increase MWDSC's supply in 2035 from 3.8 MAF to 4.9 MAF, which equates to a 28 percent increase in supply capacity.

As the majority of the new supplies are related to surface water or groundwater storage programs, these planned programs greatly enhance MWDSC's ability to capture excess supplies during wet years and thereby increase supply reliability during single and multiple dry year periods. These programs combined with water conservation are estimated to increase MWDSC's potential supply surplus in 2035 during average year conditions from 1.71 MAF to 2.76 MAF, which equates to a 61 percent increase in surplus supplies.

## 7.4 FACTORS IMPACTING SUPPLY RELIABILTY

There are a variety of factors that can impact water supply reliability. These factors impacting the District's supply sources are indicated with an "X" in Table 7.2. A brief discussion on each of these factors is provided below.

**Table 7.2 Factors Resulting in Inconsistency of Supply**

| Water Supply Sources | Specific Source Name | Legal | Environmental | Water Quality | Climatic | Additional Information |
|---|---|---|---|---|---|---|
| Imported | MWDSC | - | X | - | X | - |
| Groundwater | Groundwater | - | - | X | - | - |

### 7.4.1 Environmental

MWDSC's primary purpose is to provide a supplemental supply of water for domestic and municipal uses at wholesale rates to its member public agencies. MWDSC's principal sources of water are the SWP and the Colorado River. The Colorado River was MWDSC's original source of water after the organization's establishment in 1928 and MWDSC has a legal entitlement to receive water from the Colorado River under a permanent service. MWDSC also imports significant amounts of water from the SWP. In 1960, MWDSC signed a contract with DWR. MWDSC is one of 29 agencies that have long-term contracts for water service from DWR, and is the largest agency in terms of the number of people it serves (19.1 million), the share of SWP water that it has contracted to receive (approximately 46 percent), and the percentage of total annual payments made to DWR by agencies with State water contracts (approximately 60 percent in 2008). The longevity and importance of these legal arrangements with MWDSC's largest suppliers indicate that, while water importation is frequently litigious, MWDSC has shown a continuous ability to procure water from these supplies, and will continue to do so in the future.

Environmental concerns stem from the fragile state of many of California's water ecosystems. Because of this, environmental concerns inevitably arise during the water planning process. The delicacy of these systems can, in turn, cause a lack of supply due to the enforcement of environmental legislation. The recent legal action involving the endangered species act in the Sacramento-San Joaquin River Delta is an example of the clash between environmental concerns and water supply. In June 2007, MWDSC's Board approved a Delta Action Plan that provides a framework for staff to pursue actions with other agencies and stakeholders to build a sustainable Delta and reduce conflicts between water supply conveyance and the environment. MWDSC continues to develop principles to

help achieve its mission to provide adequate and reliable supplies of high-quality water in an environmentally and economically responsible way.

### 7.4.2 Water Quality

The western portion of the Puente Basin in the vicinity of the Puente Narrows, as shown in Chapter 3, lies within the U.S. Environmental Protection Agency's Puente Valley Operable Unit of the San Gabriel Valley Superfund Site. The cleanup of the Puente Valley Operable Unit will involve cleanup of VOCs including TCE and PCE within the shallow groundwater. As of August 2006, remediation wells had been drilled and design of the remedial action was underway. Remediation of other VOC leaks in the Puente Basin are overseen by the Los Angeles Regional Water Quality Control Board (MWD, 2007).

Based upon available water quality data from 1990 to 2002, concentrations of TDS and nitrate have been above applicable MCLs in the Spadra Basin. TDS concentrations during this period ranged from about 440 mg/L to 780 mg/L. Nitrate concentrations ranged from 1 mg/L to about 17 mg/L. Perchlorate, trichloroethylene (TCE) and tetrachloroethylene (PCE) have also been detected in various wells in the Spadra Basin. Maximum concentrations of perchlorate were 11 µg/L (Regional Board, 2006). Water quality may limit the ability to store and extract water in this basin. (MWD, 2007)

### 7.4.3 Climate

Climate change will add its own new uncertainties to the challenges of supply planning, and irrespective of the debate associated with the sources and cause of increasing concentrations of greenhouse gasses, changes in weather will significantly affect water supply planning. MWDSC intends to explore opportunities to continually increase efficiency, join the California Climate Action Registry, support environmental practices, develop solar power at some of their water treatment facilities, and pursue renewable water and energy programs that promote sustainability. Given that climatic variations will affect supply reliability, continual attention to this issue will be necessary on the part of MWDSC.

## 7.5 SUPPLY AND DEMAND COMPARISON

*10635 (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from the state, regional, or local agency population projections within the service area of the urban water supplier.*

There are two aspects of supply reliability that can be considered. The first relates to immediate service needs and is primarily a function of the availability and adequacy of the supply facilities. The second aspect is climate-related, and involves the availability of water during mild or severe drought periods. This section compares water supplies and demands during three water scenarios: normal water year, single dry water year, and multiple dry water years. These scenarios are defined as follows.

- **Normal Year**:
  The normal year is a year in the historical sequence that most closely represents median runoff levels and patterns. The supply quantities for this condition are derived from historical average yields.
- **Single Dry Year**:
  This is defined as the year with the minimum useable supply. The supply quantities for this condition are derived from the minimum historical annual yield.
- **Multiple Dry Years**:
  This is defined as the three consecutive years with the minimum useable supply. Water systems are more vulnerable to these droughts of long duration, because they deplete water storage reserves in local and state reservoirs and in groundwater basins. The supply quantities for this condition are derived from the minimum historical three consecutive years' annual average yields.

As the District is 100 percent reliant on imported water, the years chosen to represent these scenarios are consistent with MWDSC's Regional UWMP. As summarized in Table 7.3, MWDSC has identified 1977 as the single driest year since 1922 and the years 1990-1992 as the multiple driest years over that same period. These years represent the least amount of available water resources from the SWP, which is the largest source of supply for MWDSC.

### 7.5.1 Methodology

The following sections assume a 2010 demand of 25,911 af for the District. Actual 2010 consumption was 19,000 af, and after factoring in water loss this demand is estimated at 19,722 af. While this value reflects the actual 2010 demand, 25,911 is still used because it

represents a more conservative baseline. Annual demand for the last few years has been lower than projected across the region, it is anticipated that some of this reduction may be due to temporary factors such as the economic downturn, climate, and conservation efforts. For conservative planning purposes, it should not be presumed that these factors will keep demand suppressed for future projections.

Secondly, the MWD factors used to estimate supply given District demands are based only on existing supply sources. In five year increments for each drought scenario, MWD's projected system wide "supply as a percent of demand" factor is used to estimate the District's proportional allotment of supply. These volumes are conservative because they only include MWD's current supply, and none of the water that MWD is already planning to add to their supply.

As shown in Table 7.10, Table 7.12, and Table 7.14, MWD projects adequate supply to meet all drought demand conditions. To that end, this analysis finds that the District will have sufficient supplies in all years and drought conditions to meet customer demands. The benefit of following MWD's methodology so closely is that it provides a justification for the projected surplus. In the first year of a multiple year drought occurring in 2015, for example, supply is only set to 101% of demand, as shown in Table 7.13. Combined with the assumption that drought demands will increase by 9 percent, discussed above, a valid picture of drought supply can be calculated.

### 7.5.2 Basis of Water Year Data

The assumptions that underlie the calculations of supply and demand are based in historical demand data for the District.

**Table 7.3 Basis of Water Year Data**

| Water Year Type | Base Year(s) |
|---|---|
| Average Water Year | 2001 |
| Single-Dry Water Year | 1977 |
| Multiple-Dry Water Years | 1990-1992 |

Source: Regional UWMP (MWDSC, 20010) and historical consumption and population data for the District for average year.

The Regional UWMP does not identify a particular year that would represent average demand conditions. To determine the average demand year, the District's historical per-capita water usage was evaluated. By normalizing water consumption with population and thus expressing consumption in gpcd, the increase of demands due to growth is eliminated. The historical per capita consumption from the period 1995 to 2010 is shown below in Figure 7.1. As shown, the average consumption in the period was 197 gpcd. As the per-capita consumption in 2001 was 196 gpcd and the closest to the 16-year average of 197 gpcd, this year was selected to represent average year conditions.

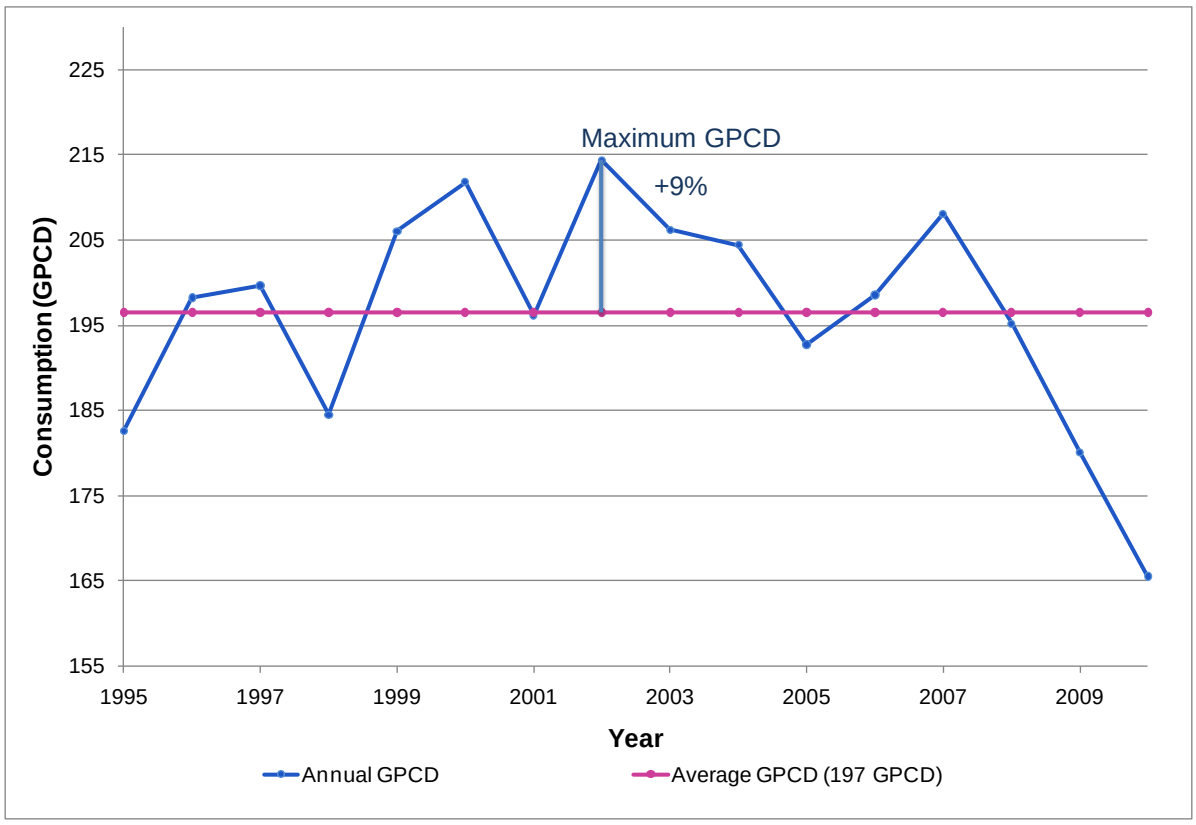


**Figure 7.1 Historical Per Capita Consumption Variation**

The supply reliability for these historical conditions is presented in Table 7.4. Historic consumption data was not available for 1977. Taking the average of years 1990 through 1992, per capita consumption in the multiple dry year period of 1990 to 1992 was approximately 6 percent lower than the average usage from 1995 to 2010. Although this indicates conservation occurring during the dry year demand condition, for conservative planning purposes it is planned that demands will increase during drought years due to increased irrigation requirements.

**Table 7.4 Supply Reliability – Historic Conditions**

| Water Supply Source (afy) | Average Year (2001) | Single Dry Year (1977) | Multiple Dry Years | | |
|---|---|---|---|---|---|
| | | | 1990 | 1991 | 1992 |
| Imported | 22,689 | n/a | 24,080 | 18,965 | 20,805 |
| % of Normal | 100% | n/a | 106.1% | 83.6% | 91.7% |
| Recycled | 1,531 | n/a | Not Available | Not Available | Not Available |
| % of Normal | 100% | n/a | - | - | - |
| **Total (afy)** | 24,220 | n/a | - | - | - |
| **% of Normal** | 100% | n/a | - | - | - |

Notes:
Source: District production records.

Instead, the year with the maximum per-capita usage was selected to project future demands during single and multiple dry years. As shown in Figure 7.1, the maximum per capita use in the 16-year period was 214 gpcd, which is 9 percent higher than the average 1995 to 2010 consumption of 197 gpcd.

This method differs from the single and multiple dry year demand projections presented in MWDSC's 2010 Regional UWMP, but provides a more conservative planning basis. The demand projections shown in Table 7.5 are obtained from the MWD-MAIN Water Use Forecasting System (MWD-Main), which are based on forecasts taken from the SCAG 2007 Regional Transportation Plan and the San Diego Association of Governments Series 12: 2050 Regional Growth Forecast.

**Table 7.5 MWDSC Retail Demands for Average, Single, and Multiple Dry Years**

| Retail Municipal and Industrial Demand | 2015 (afy) | 2020 (afy) | 2025 (afy) | 2030 (afy) | 2035 (afy) |
|---|---|---|---|---|---|
| Average Year (afy) | 4,978,000 | 5,170,000 | 5,330,000 | 5,491,000 | 5,627,000 |
| Single Dry Year (afy) | 5,000,000 | 5,194,000 | 5,354,000 | 5,515,000 | 5,653,000 |
| Multiple Dry Year (afy) | 5,004,000 | 5,232,000 | 5,409,000 | 5,572,000 | 5,715,000 |
| Single Dry Year Increase(1) | 0.4% | 0.5% | 0.5% | 0.4% | 0.5% |
| Multiple Dry Year Increase(1) | 0.5% | 1.2% | 1.5% | 1.5% | 1.6% |

Notes:
(1) As percentage of Average Year Conditions
(2) Source: Tables 2-6, 2-7, and 2-8 of Regional UWMP (MWDSC, 2010)

As shown in Table 7.5, the Regional UWMP shows that the single and multiple dry year retail municipal and industrial demands increase between 0.4 and 1.6 percent. This is

substantially less than assumed in the District's 2005 UWMP, which assumed a 10 percent increase in volume in single dry years. Demand variations due to dry year conditions are anticipated to be less noticeable in the much larger service area of MWDSC than in the District's service area because:

- MWDSC's customers may experience different levels of extreme dry weather within different portions of its large service area;
- MWDSC's service area includes many urban regions with very limited outdoor demands, making those areas less sensitive to weather variations; and
- MWDSC's service area includes more industrial and other non-residential demands that are not sensitive to weather.

In other words, the District's demands are expected to increase relatively more during hydrological dry years than MWDSC's demand, as the entire area would experience dry extreme dry weather conditions at the same time and because the primarily residential character with plentiful outdoor usage makes demands more weather sensitive. It was therefore decided to use the District's historical demands normalized for population (per capita consumption) as shown in Figure 7.1 as a basis for projecting the demand increase during single and multiple dry years. This means that 2002 was chosen as the base year for both single and multiple dry year projections and that the average demands for these years were increased by 9 percent.

### 7.5.3 Average Year

The projected average year demands and supplies are compared in 5-year increments in Table 7.6 through Table 7.10. This comparison consists of a number of steps that are described below.

First, the projected average year demands future years are compared with the year 2010 demands. As shown, the projected demands for the entire planning period are projected to remain below the projected demand of 25,911 af for year 2010. This decrease reflects the SBx7-7 water conservation targets combined with limited growth potential within the District's service. This trend is shown in Table 7.6.

**Table 7.6 WVWD Projected Average Year Water Demands**

| Description | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| Projected Average Year Demand (afy) | 24,242 | 22,319 | 23,075 | 23,806 | 24,496 |
| Increase Compared to 2010[(1)] (afy) | (1,669) | (3,591) | (2,835) | (2,104) | (1,415) |
| Increase Compared to 2010 | -6% | -14% | -11% | -8% | -5% |
| Demand as % of 2010 Demand | 94% | 86% | 89% | 92% | 95% |

Notes:
1) Based on a 2010 Average Year Demand of 25,911 afy.

Once again, this comparison only includes the current supply programs operated by MWDSC, such as the existing in-region storage programs, the SWP via the California Aqueduct, and the Colorado River Aqueduct. For conservative planning purposes, the capacities of the new programs that are under development are not included in the summary presented in Table 7.7. It should be noted that the average year supply for 2010 was obtained from the 2005 Regional UWMP as this information was not presented in the 2010 Plan. As shown, there has been a significant increase in the estimated supply capacity between year 2010 (2.7 MAF) and 2015 (3.5 MAF).

**Table 7.7 MWDSC Projected Average Year Supplies**

| Description | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| Average Year Supply[(1)] (afy) | 3,485,000 | 3,810,000 | 4,089,000 | 3,947,000 | 3,814,000 |
| Increase Compared to 2010[(2)] (afy) | 817,000 | 1,142,000 | 1,421,000 | 1,279,000 | 1,146,000 |
| Increase Compared to 2010 | 31% | 43% | 53% | 48% | 43% |
| Supply as % of 2010 Supply | 131% | 143% | 153% | 148% | 143% |

Notes:
1) Based on the current supply programs as listed in Table 2-11 from the 2010 Regional UWMP.
2) Based on the projected supply capacity of 2,668,000 afy obtained from 2005 Regional UWMP.

Subsequently, the projected supplies and demand of MWDSC are compared under average year conditions. As shown in Table 7.8, the projected supplies are substantially greater (174-181%) than the projected demands through the planning horizon of 2035. This reflects a combination of increased water conservation efforts by the member agencies as well an increase in local supplies.

**Table 7.8 MWDSC Projected Average Year Supply as Percentage of Demand**

| Description | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| Average Year Supply[(1)] (afy) | 3,485,000 | 3,810,000 | 4,089,000 | 3,947,000 | 3,814,000 |
| Average Year Demand[(2)] (afy) | 2,006,000 | 1,933,000 | 1,985,000 | 2,049,000 | 2,106,000 |
| MWDSC Supply as % of Demand | 174% | 197% | 206% | 193% | 181% |

Notes:
1) Based on the current supply programs as listed in Table 2-11 from the 2010 Regional UWMP.
2) Based on total demands on Metropolitan as listed in Table 2-11 from the 2010 Regional UWMP.

The last step involves the comparison of the relative increase in District demand with the relative increase in MWDSC supplies. This comparison is presented in Table 7.9. As shown, the imported water supplies are projected to increase substantially more (81-118%) than the District's demands. This difference indicates that it is reasonable to expect that MWDSC would have sufficient supplies available to accommodate the District's projected demands under average year conditions, as the District would get its proportional share of the increased supplies as one of MWDSC's 26 member agencies.

**Table 7.9 Normal Year Supply and Demand Growth**

| Row | Description | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| 1 | District Demand as % of 2010 Demand (from Table 7.6) | 94% | 86% | 89% | 92% | 95% |
| 2 | MWDSC Supply as % of 2010 Supply (from Table 7.7) | 131% | 143% | 153% | 148% | 143% |
| 3 | MWDSC Supply as % of Demand (from Table 7.8) | 174% | 197% | 206% | 193% | 181% |
| 4 | Difference MWD Supply Increase and District Demand Increase (Row 3 – Row 1) | 80% | 111% | 117% | 101% | 87% |

The ratios presented in Table 7.9 are used to project the imported water supply availability for each planning year. By combining the imported water supplies with the other supply sources, the total available supply capacity is calculated. The available supplies are then compared with the projected demands to determine if the District has sufficient water supplies available to meet future demand under average year conditions. This summary is presented in Table 7.10.

**Table 7.10 Supply and Demand Comparison – Normal Year**

| Water Sources | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| **Supply** | | | | | |
| Projected Supply as a % of Demand During a Normal Year[(1)] | 174% | 197% | 206% | 193% | 181% |
| Imported Water Supply[(2)] | 42,115 | 43,992 | 47,534 | 45,858 | 44,362 |
| Groundwater Supply[(3)] | 0 | 0 | 0 | 0 | 0 |
| Recycled Water Supply[(4)] | 2,670 | 3,140 | 3,516 | 4,080 | 4,550 |
| **Total Supply** | **44,785** | **47,132** | **51,050** | **49,938** | **48,912** |
| % of Normal Year Supply | 100% | 100% | 100% | 100% | 100% |
| **Demands** | | | | | |
| Imported Water | 24,242 | 22,319 | 23,075 | 23,806 | 24,496 |
| Groundwater[(3)] | 0 | 0 | 0 | 0 | 0 |
| Recycled Water | 2,670 | 3,140 | 3,516 | 4,080 | 4,550 |
| **Total Demand** | **26,912** | **25,459** | **26,591** | **27,886** | **29,046** |
| % of Year 2010 Demand[(5)] | 104% | 98% | 103% | 108% | 112% |
| **Difference Supply - Demand** | **17,873** | **21,673** | **24,459** | **22,052** | **19,866** |
| **Difference as % of Supply** | **40%** | **46%** | **48%** | **44%** | **41%** |
| **Difference as % of Demand** | **66%** | **85%** | **92%** | **79%** | **68%** |

Notes:
1) From Table 7.8.
2) Calculated by multiplying the imported water demand with the imported water supply (%) from Row 1.
3) Groundwater is set to 0 to avoid double counting as all pumped groundwater is used to supplement the recycled water system. This is therefore not included as a demand source either.
4) Recycled water production is assumed to be equal to the recycled water demand, but would need to be supplemented by groundwater and/or potable water on a seasonal basis.
5) Year 2010 deliveries are assumed to be 25,911 afy.

As shown in Table 7.10, it is projected that District has sufficient supplies available to meet both potable and recycled water demands through 2035 under average year condition with a supply surplus ranging from 66 to 92 percent of the projected demands.

### 7.5.4 Single Dry Year

As described in the previous section, the projected average year potable and recycled water demands were increased by 9 percent to estimate the water demands during single dry years, while the projected imported water supplies were obtained from MWDSC's Regional 2010 UWMP. The projected single dry year demands and supplies were

compared in 5-year increments and are presented in Table 7.11 and Table 7.12. The data presented in Table 7.11 and Table 7.12 are similar to data presented in Table 7.10 but based on single dry year conditions versus average year conditions. Details on the calculations of the values presented in this table are included in Appendix H.

**Table 7.11 Single Dry Year Supply and Demand Growth**

| Row | Description | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| 1 | District Demand as % of 2010 Demand | 102% | 94% | 97% | 100% | 103% |
| 2 | MWDSC Supply as % of 2010 Supply | 86% | 98% | 105% | 99% | 95% |
| 3 | MWDSC Supply as % of Demand | 113% | 129% | 135% | 125% | 116% |
| **4** | **Difference MWD Supply Increase and District Demand Increase (Row 3 – Row 1)** | **11%** | **35%** | **38%** | **25%** | **13%** |

Notes:
Details on the calculations in each row are included in Appendix H.

As shown in Table 7.11, the imported water supplies are projected to increase more (21-47 percent) than the District's demands. This difference indicates that, similar to average year conditions, it is reasonable to expect that MWDSC would have sufficient supplies available to accommodate District's projected demands under single dry year conditions as the District would get its proportional share of the increased supplies and MWDSC has indicated that it can meet 100 percent reliability.

The ratios presented in Table 7.11 were used to project the imported water supply availability for each planning year. By combining the imported water supplies with the other supply sources, the total available supply capacity was calculated. The available supplies are then compared with the projected demands to determine if the District has sufficient water supplies available to meet future demand under single dry year conditions. This summary is presented in Table 7.12.

**Table 7.12 Supply and Demand Comparison – Single Dry Year**

| Water Sources | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| **Supply** | | | | | |
| Projected Supply as a % of Demand During a Single Dry Year(1) | 113% | 129% | 135% | 125% | 116% |
| Imported Water Supply(2) | 29,934 | 31,335 | 34,054 | 32,532 | 31,003 |
| Groundwater Supply(3) | 0 | 0 | 0 | 0 | 0 |
| Recycled Water Supply(4) | 2,913 | 3,426 | 3,836 | 4,452 | 4,964 |
| **Total Supply** | **32,848** | **34,761** | **37,890** | **36,983** | **35,967** |
| % of Normal Year Supply | 73% | 74% | 74% | 74% | 74% |
| **Demands** | | | | | |
| Imported Water | 26,450 | 24,352 | 25,177 | 25,975 | 26,727 |
| Groundwater(3) | 0 | 0 | 0 | 0 | 0 |
| Recycled Water | 2,913 | 3,426 | 3,836 | 4,452 | 4,964 |
| **Total Demand** | **29,363** | **27,778** | **29,013** | **30,426** | **31,691** |
| % of Year 2010 Demand(5) | 113% | 107% | 112% | 117% | 122% |
| **Difference Supply - Demand** | **3,484** | **6,983** | **8,877** | **6,557** | **4,276** |
| **Difference as % of Supply** | **11%** | **20%** | **23%** | **18%** | **12%** |
| **Difference as % of Demand** | **12%** | **25%** | **31%** | **22%** | **13%** |

Notes:
1) From Table 7.11.
2) Calculated by multiplying the imported water demand with the imported water supply (%) from Row 1.
3) Groundwater is set to 0 to avoid double counting as all pumped groundwater is used to supplement the recycled water system. This is therefore not included as a demand source either.
4) Recycled water production is assumed to be equal to the recycled water demand, but would need to be supplemented by groundwater and/or potable water on a seasonal basis.
5) Year 2010 deliveries are assumed to be 25,911 afy.

As shown in Table 7.12, it is projected that the District has sufficient supplies available to meet both potable and recycled water demands through 2035 under single dry year condition with a supply surplus ranging from 12 to 31 percent of the projected demands.

### 7.5.5 Multiple Dry Year

As described in the previous section, the projected average year potable and recycled water demands are increased by 9 percent to estimate the water demands during both single and multiple dry years, while the projected imported water supplies are obtained from MWDSC's Regional 2010 UWMP. The projected multiple dry year demands and supplies are compared in 5-year increments in Table 7.13 through Table 7.14. The data presented in

Table 7.13 is similar to the data presented in Table 7.10 but based on multiple dry year conditions versus average year conditions. Details on the calculations of the values presented in this table are included in Appendix H.

**Table 7.13 Multiple Dry Years Supply and Demand Growth**

| Row | Description | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| 1 | District Demand as % of 2010 Demand | 102% | 94% | 97% | 100% | 103% |
| 2 | MWDSC Supply as % of 2010 Supply | 86% | 92% | 96% | 94% | 92% |
| 3 | MWDSC Supply as % of Demand | 101% | 110% | 110% | 105% | 101% |
| **4** | **Difference MWD Supply Increase and District Demand Increase (Row 3 – Row 1)** | **-1%** | **16%** | **13%** | **5%** | **-2%** |

Notes:
Details on the calculations in each row are included in Appendix H

As shown in Table 7.13, the imported water supplies are projected to increase, as a percentage, more than the District's demands in some years, while the percent increase in District's demand will be greater in other years. The presence of negative values in Table 7.13 indicates that in drought years 2015 and 2035, the District's demands change more, relative to 2010, than MWD's supply does relative to projected demand. Under these conditions however, MWD's supply is still large enough that a relatively small supply surplus in relation to projected demands will still be sufficient to meet the District's demand. This is shown numerically in Table 7.14. The District's proportional share of MWD's supply will still be sufficient to meet all multiple dry year demands.

The ratios presented in Table 7.13 are used to project the imported water supply availability for a multiple dry year scenario. By combining the imported water supplies with the other supply sources, the total available supply capacity is calculated. The available supplies are then compared with the projected demands to determine if the District has sufficient water supplies available to meet future demand under multiple dry year conditions. This summary is presented in Table 7.14.

**Table 7.14 Supply and Demand Comparison – Multiple Dry Years**

| Water Sources | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|
| **Supply** | | | | | |
| Projected Supply as a % of Demand During Multiple Dry Years[1] | 101% | 110% | 110% | 105% | 101% |
| Imported Water Supply[2] | 26,714 | 26,787 | 27,695 | 27,273 | 26,994 |
| Groundwater Supply[3] | 0 | 0 | 0 | 0 | 0 |
| Recycled Water Supply[4] | 2,913 | 3,426 | 3,836 | 4,452 | 4,964 |
| **Total Supply** | **29,628** | **30,213** | **31,531** | **31,725** | **31,958** |
| % of Normal Year Supply | 66% | 64% | 62% | 64% | 65% |
| **Demands** | | | | | |
| Imported Water | 26,450 | 24,352 | 25,177 | 25,975 | 26,727 |
| Groundwater[3] | 0 | 0 | 0 | 0 | 0 |
| Recycled Water | 2,913 | 3,426 | 3,836 | 4,452 | 4,964 |
| **Total Demand** | **29,363** | **27,778** | **29,013** | **30,426** | **31,691** |
| % of Year 2010 Demand[5] | 113% | 107% | 112% | 117% | 122% |
| **Difference Supply - Demand** | **264** | **2,435** | **2,518** | **1,299** | **267** |
| **Difference as % of Supply** | **1%** | **8%** | **8%** | **4%** | **1%** |
| **Difference as % of Demand** | **1%** | **9%** | **9%** | **4%** | **1%** |

Notes:
1) From Table 7.13.
1) Calculated by multiplying the imported water demand with the imported water supply (%) from Row 1.
2) Groundwater is set to 0 to avoid double counting as all pumped groundwater is used to supplement the recycled water system. This is therefore not included as a demand source either.
3) Recycled water production is assumed to be equal to the recycled water demand, but would need to be supplemented by groundwater and/or potable water on a seasonal basis.
4) Year 2010 deliveries are assumed to be 25,911 afy.

As shown in Table 7.14, the projected demands are just below the projected supply in each year of a 3-year multiple dry year period. Although supply surplus only ranges from 1 to 9 percent, it should be noted that these summaries include two key conservative planning assumptions as discussed in the methodology. These are:

- The projected available supply from MWDSC only includes the existing supply programs and does not include the programs that are currently under development which are estimated to increase the imported water supplies by 17 to 39 percent, depending on the planning year and hydrologic conditions (see Table 7.1). It should be noted that these planned programs increase the total available imported water supply relatively more during single and multiple dry years than during average years.

- Both potable water and recycled water demands during single and multiple dry are assumed to increase by 9 percent, which represents the maximum per capita demand increase in the period 1990 to 2009.

Based on the positive supply surplus shown in this section and the two conservative planning assumptions listed above, it can be concluded that District has sufficient supplies available to meet both potable and recycled water demands through 2035 under average, single dry year, and multiple dry year conditions.

MWDSC did not provide supply information for years 2011 through 2013 in their 2010 RUWMP. Due to recent demand reduction actions by MWDSC however, it is assumed that supply will be sufficient for this period of time. These findings are reflected in Table 7.15

**Table 7.15 Current and Projected Demand**

| | | Multiple Dry Year Water Supply (afy) | | |
|---|---|---|---|---|
| **Supply Source** | **Average Water Year** | **2011** | **2012** | **2013** |
| Wholesaler (TVMWD) | 22,689 | 27,906 | 27,542 | 27,178 |
| **Total** | **22,689** | **27,906** | **27,542** | **27,178** |

Notes: Demands have been set equal to supply to reflect adequate supply sources

As shown in Table 7.15, there will be sufficient water to meet demands within the District for years 2011 through 2013.

## 7.6 TRANSFER AND EXCHANGE OPPORTUNITIES

Water exchange and transfers are currently taking place at the importer and wholesale supplier level. MWDSC's Central Valley and SWP storage and transfer program are an example of such an opportunity. By 2025, an additional 160,000 afy of supply capability, 125,000 afy from Central Valley and SWP plus another 35,000 afy from the Mojave project, is currently planned for the region. TVMWD also anticipates an opportunity for long-term inter-basin transfers amounting to an additional 5,000 afy within the eastern San Gabriel basin area. The District is not, at this time, considering pursuit of separate transfer or independent water exchange opportunities with other area agency suppliers/providers, but certainly could in the future.

## 7.7 OPPORTUNITIES FOR DESALINATED WATER

*10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:*

*10631 (i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long term supply.*

The UWMPA requires that the UWMP address the opportunities for development of desalinated water, including ocean water, brackish water, and groundwater. The opportunities for the District and MWDSC are described separately below.

### 7.7.1 District Desalination Opportunities

As summarized in Table 7.16, there are no opportunities identified for development of desalinated water by the District.

**Table 7.16 Desalination Opportunities for the District**

| Sources of Water | Opportunities for Desalinated Water |
|---|---|
| Ocean Water | None |
| Brackish Ocean Water | None |
| Brackish Groundwater | None |
| Other | None |

**Groundwater Desalination**

As discussed in Chapter 3, the District's service area does not overlie any brackish groundwater basins and the District has not identified any potentially cost-effective desalination opportunities. However, the District is currently utilizing impaired groundwater (high in total dissolved solids) from the Puente Basin for its recycled water system.

The regional suppliers are evaluating a number of specific water desalination opportunities throughout Southern California that have been conceptually identified and discussed in various water management plans and documents. As many of these opportunities are in the formative stage, no attempt has been made by the District to express potential yields or start dates.

**Seawater Desalination**

It is not practical nor economically feasible for the District to implement a seawater desalination program at this time. The topology of District's service area would not be conducive to pumping desalinated water from the ocean. The District could provide financial assistance to other purveyors who can develop desalinated supplies in exchange for imported water supplies. Should the need arise; the District may consider this option.

### 7.7.2 MWDSC's Desalination Program

Although the District has not identified any specific project opportunities for desalination of seawater or impaired groundwater at this time, other desalination projects developed by MWDSC within the region indirectly benefit the District. The recent efforts to develop and implement desalination by MWDSC as described in its regional 2010 UWMP are summarized below.

MWDSC's Seawater Desalination Program (SDP) was created in 2001 to encourage the development of seawater desalination by local agencies and was modeled after the Local Resources Program (LRP). Like the LRP, it offers sliding-scale incentives to member and local agencies that proceed up to $250/acre-foot of produced supplies. The incentive is designed to accelerate the development of expensive local supply projects by member agencies by lowering their cost. MWDSC has entered into four SDP agreements, while a fifth potential agreement with the Los Angeles Department of Water and Power (LADWP) that could potentially produce up to 28,000 afy, is currently on hold. In addition, there are currently three other desalination projects under development by local agencies within MWDSC's service area outside the SDP. The desalination projects are summarized in Table 7.17. The potential capacity of all these combined project ranges from 270,000 to 422,000 afy.

**Table 7.17 MWDSC Desalination Project Opportunities**

| Project Name | Member Agency | Capacity (afy) | Status n/a |
|---|---|---|---|
| Long Beach Seawater Desalination Project(1) | LBWD | 10,000 | Pilot Study |
| South Orange Coastal Ocean Desalination Project(1) | MWDOC | 16,000-28,000 | Pilot Study |
| Carlsbad Seawater Desalination Project(1) | SDCWA | 56,000 | Permitting |
| West Basin Seawater Desalination Project(1) | WBMWD | 20,000 | Pilot Study |
| LADWP Seawater Desalination Project | LADWP | 28,000 | Unknown |
| Huntington Beach Seawater Desalination Project | MWDOC | 56,000 | Permitting |
| Camp Pendleton Seawater Desalination Project | SDCWA | 56,000-168,000 | Planning |
| Rosarito Beach Seawater Desalination Feasibility Study | SDCWA | 28,000-56,000 | Feasibility Study |

Notes:
1) These SDPs have executed incentive agreements with MWDSC.

To promote the development of local seawater desalination projects, MWDSC provides regional facilitation by supporting member agency projects during permit hearings and other proceedings, coordinating responses to potential legislation and regulations, and working with the member agencies to resolve related issues, such as greenhouse gas emission standards and seawater intake regulations, that could impact the projects. MWDSC has also formed a special committee to find additional ways to promote potential projects and explore opportunities for developing regional seawater desalination supplies.

## 7.8 CLIMATE CHANGE IMPACTS ON SUPPLY RELIABILITY

Because the District is 100 percent reliant on MWDSC for its potable water supply, the effects of climate change on District are best summarized by considering the effects of climate change on MWDSC supplies, described in MWDSC's 2010 Regional UWMP (MWDSC, 2010). While the exact timing and magnitude of the effects of climate change are still under debate, researchers have identified some specific areas of concern for California water users, these concerns are listed as follows:

- Reduction in Sierra Nevada snowpack, which is a significant source of water as it melts and feeds water systems on both east and west sides of the state;
- Increase in intensity and frequency of extreme weather events;
- Rising sea levels, resulting in increased storm damage and cutbacks on the SWP and Central Valley Project;
- Effects on groundwater;
- Changes to demand levels and patterns;
- Water borne pathogens and water quality degradation;
- General decline in ecosystem health and function; and
- Alterations to power generation and pumping regimes.

As scientific understanding of climate change continues to advance, the nature of these impacts will be more thoroughly understood and better addressed.

**Chapter 8**

# WATER SHORTAGE CONTINGENCY PLAN

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that includes stages of action to be undertaken in the event of water supply shortages; a draft water shortage contingency resolution or ordinance; prohibitions, consumption reduction methods and penalties; an analysis of revenue and expenditure impacts and measures to overcome these impacts; actions to be taken during a catastrophic interruption; and a mechanism for measuring water use reduction.

## 8.1 STAGES OF ACTIONS

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that addresses specified issues.

> *10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *10632 (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply and an outline of specific water supply conditions which are applicable to each stage.*

### 8.1.1 Water Shortage Stages and Reduction Objectives

The following sections describe the District's water shortage stages and the conservation measures employed during each stage, as outlined in Ordinance 06-09-07.

**Permanent Requirements on Water Use Efficiency**

Certain water use efficiency requirements are effective at all times and are permanent requirements set forth in the District's Rules and Regulations. Violations will be considered waste and an unauthorized use of water, which will result in penalties, outlined in Section 8.3.

1. Limit on Watering Duration: Watering or irrigating of lawn, landscape, or other vegetated area with potable water using a landscape irrigation system or a watering device that is not continuously attended is limited to no more than fifteen minutes watering per day per station. This subsection does not apply to landscape irrigation systems that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two gallons of water per hour and weather based controllers or stream rotor sprinklers that meet a 70 percent efficiency standard.

2. No Excessive Water Flow or Runoff: Watering or irrigating of any lawn, landscape, or other vegetated area in a manner that causes or allows excessive water flow or runoff onto an adjoining sidewalk, driveway, street, alley, gutter, or ditch is prohibited.

3. No Washing Down Hard or Paved Surfaces: Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios, or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.

4. Obligation to Fix Leaks, Breaks, or Malfunctions: Excessive use, loss, or escape of water through breaks, leaks, or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than seven days of after receiving written notice from the District is prohibited.

5. Limits on Washing Vehicles: Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat, or trailer, whether motorized or not, is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility.

6. Re-circulating Water Required for Water Fountains and Decorative Water Features: Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.

7. No Installation of Single Pass Cooling Systems Water System: Installation of single pass cooling systems is prohibited in buildings requesting new water service.

8. No Installation of Non-re-circulating in Commercial Car Wash and Laundry Systems: Installation of non-re-circulating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.

9. Negligent Waste of Water: At the discretion of the General Manager, the District reserves the right to determine negligent waste or misuse of water supplies. Such water use constitutes an unauthorized waste of water and is subject to the imposition penalties outlined in Section 11.

**Stage 1 Water Supply Shortage – (10 to 15 Percent Reduction of Water Use)**

A Stage 1 Water Supply Shortage exists when the District, through its Board of Directors, determines that a drought, water supply shortage, or a threatened water shortage exists, and customer allocations are necessary to make more efficient use of water and appropriately respond to existing water conditions. In this case, a 10 percent to 15 percent reduction of water use will be required to lower overall water demand. The percentage will be determined by action of the District's Board of Directors and be publically announced as described in Ordinance 06-09-07.

In addition to the permanent prohibited uses of water identified above, the following water conservation requirements apply during a declared Stage 1 Water Supply Shortage.

1. Limits on Watering Hours: During times of water shortage (as declared in accordance with by section 4.02.04.03 of the District's Rules and Regulations), watering or irrigating of lawn, landscape, or other vegetated area with potable water is prohibited between the hours of 8:00 A.M. and 5:00 P.M. Pacific Standard Time or Pacific Daylight Time, as applicable, on any day, except by a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

2. Obligation to Fix Leaks, Breaks, or Malfunctions: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within five days after written notification by the District unless other arrangements are made with the District.

3. Drinking Water Served Upon Request Only: Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, will not provide drinking water to any person unless expressly requested. These establishments can prominently display notices of this provision throughout their facility with signs using clear and easily understood language that will be provided by the District.

4. Option to Decline Daily Linen Services at Commercial Lodging Establishments: Hotels, motels, and other commercial lodging establishments are encouraged to provide customers the option of not having towels and linen laundered daily. Commercial lodging establishments can prominently display notice of this option in each bathroom using clear and easily understood language that will be provided by the District.

**Stage 2 Water Supply Shortage – (15 to 25 Percent Reduction of Water Use)**

A Stage 2 Water Supply Shortage exists when the District, through its Board of Directors, determines that a drought, water supply shortage, or threatened water shortage exists and reduced customer usage is necessary to make more efficient use of water and appropriately respond to existing water conditions and a 15 percent to 25 percent reduction of water use will be required to lower overall water demands. Percentage will be determined by action of the District's Board of Directors and be publically announced as described in Ordinance 06-09-07.

In addition to the permanent and Stage 1 prohibited uses of water identified above, the following additional water conservation requirements apply during a declared Stage 2 Water Supply Shortage.

1. Watering Days: Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to three days per week on a schedule established and posted by the District. This provision does not apply to landscape irrigation zones that exclusively use

very low-flow drip type irrigation systems when no emitter produces more than two gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

2. Obligation to Fix Leaks, Breaks, or Malfunctions: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within 72 hours after written notification by the District unless other arrangements are made with the District.

3. Limits on Filling Residential Swimming Pools & Spas: Re-filling of water constituting more than one foot of depth and initial filling of, residential swimming pools or outdoor spas with potable water is prohibited.

**Stage 3 Water Supply Shortage – (25 to 35 Percent Reduction of Water Use)**

Stage 3 Water Supply Shortage condition exists when the District, through its Board of Directors, determines that a drought, a water supply shortage, or threatened water shortage exists and reduced customer usage is necessary to make more efficient use of water and appropriately respond to existing water conditions and a 25 to 35 percent reduction of water use will be required to lower overall water demands. Percentage will be determined by action of the District's Board of Directors and be publically announced as described in Ordinance 06-09-07.

In addition to the permanent water use requirements, Stage 1, and Stage 2 prohibited uses of water identified above, the following additional water conservation requirements apply during a declared Stage 3 Water Supply Shortage.

1. Limits on Watering Days: Watering or irrigating of lawn, landscape, or other vegetated area with potable water is limited to two days per week on a schedule established and posted by the District. This provision does not apply to landscape irrigation zones that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

2. Obligation to Fix Leaks, Breaks or Malfunctions: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within 48 hours after written notification by the District unless other arrangements are made with the District

3. Limits on Filling Ornamental Lakes or Ponds: Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a supply shortage level under this ordinance.

**Stage 4 Water Supply Shortage – (35 to 50 Percent Reduction of Water Use)**

Stage 4, also referred to as an "Emergency" condition exists when the District, through its Board of Directors, declares a water shortage emergency and notifies its residents and businesses that a 35 to 50 percent reduction of water use is necessary to maintain sufficient water supplies for public health and safety. Percentage will be determined by action of the District's Board of Directors and be publically announced as described in Ordinance 06-09-07.

1. Limits on Watering: Watering Days: Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to one day per week on a schedule established and posted by the District. This provision does not apply to landscape irrigation zones that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system. This restriction does not apply to the following categories of use:

i. Maintenance of vegetation, including trees and shrubs, that are watered using a hand-held bucket or similar container, hand-held hose equipped with a positive self–closing water shut-off nozzle or device;

ii. Maintenance of existing landscape necessary for fire protection;

iii. Maintenance of existing landscape for soil erosion control;

iv. Maintenance of plant materials identified to be rare or essential to the well-being of protected species;

v. Maintenance of landscape within active public parks and playing fields, day care centers, golf course greens, and school grounds, provided that such irrigation does not exceed two (2) days per week according to the schedule established in Section 6(B)(1) and time restrictions in Section 5(B)(1); and

vi. Actively irrigated environmental mitigation projects.

Administration of Water Shortage Program

The existence of Stage 1, Stage 2, Stage 3, or Stage 4 Water Supply Shortage conditions may be declared by resolution and adopted at a regular or special Board meeting held by the District in accordance with State law. The mandatory conservation requirements applicable to Stage 1, Stage 2, Stage 3, or Stage 4 conditions will take effect on the tenth day after the date the Stage level is declared. Within five days following the declaration of the shortage level, the District must publish a copy of the resolution in a newspaper used for publication of official notices.

## 8.2 WATER SHORTAGE CONTINGENCY ORDINANCE/ RESOLUTION

According to the UWMPA, the UWMP is required to include an urban water shortage contingency analysis that includes a draft water shortage contingency resolution or ordinance.

> *10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *10632 (h) A draft water shortage contingency resolution or ordinance.*

In addition to programmatic, voluntary conservation measures, it may become necessary to implement further compliance measures to realize the targeted conservation goals. The Board of Directors may amend existing drought ordinances, or adopt more stringent ordinances as necessary to ensure.

District adopted its Water Shortage Response Plan on June 22, 2009. Copies of the relevant ordinances are included in Appendix F.

## 8.3 PROHIBITIONS, CONSUMPTION REDUCTION METHODS, AND PENALTIES

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that addresses methods to reduce consumption.

> *10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *10632 (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.*
>
> *10632 (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.*
>
> 10632 (f) Penalties or charges for excessive use, where applicable.

### 8.3.1 Mandatory Prohibitions on Water Wasting

As described above, the District has permanent prohibitions in place for wasteful practices, including restrictions on the following.

- Limitations on Watering Duration
- Limitations on Excessive Flow Runoff
- No Washing Down Hard or Paved Surfaces

- Obligation to Fix Leaks, Breaks, or Malfunctions
- Limits on Washing Vehicles
- Re-circulating Requirements for Water Required for Water Fountains and Decorative Water Features
- No Installation of Single Pass Cooling Systems Water System
- No Installation of Non-re-circulating in Commercial Car Wash and Laundry Systems

### 8.3.2 Excessive Use Penalties

Violations of the District's water conservation ordinance may be considered an unauthorized use of water and subject to penalties established in the District's Rules and Regulations, Article 4.05.02.03 and/ or Article 4.03.07.06.

Penalties for failure to comply with any provisions of the ordinance are as follows:

1. First Violation: The District will issue a written notice of non-compliance and deliver a copy of this ordinance by certified mail.

2. Second Violation: For a second violation within the preceding 12 calendar months, the District will issue a final written notice of non-compliance.

3. Third and Subsequent Violations: A third violation, and any subsequent violation, within the preceding 12 calendar months may be considered an unauthorized use of water and subject to penalties established in Article 4.05.02.03 and/or Article 4.03.07.06 of the District's Rules and Regulations

4. Water Flow Restrictor: In addition to any fines, the District may install a water flow restrictor device of approximately one gallon per minute capacity for services up to one and one-half inches in size and comparatively sized restrictors for larger services after providing written notice to the customer of intent to install a flow restrictor for a minimum of 48 hours prior to such installation.

A person or entity that violates this ordinance is responsible for payment of the District's charges for installing and/or removing any flow restricting device and for disconnecting and/or reconnecting service per the District's schedule of charges then in effect. The charge for installing and/or removing any flow restricting device and disconnection service must be paid to the District before water supply is returned. Nonpayment will be subject to the same remedies as nonpayment of basic water rate established in the District's Rules and Regulations.

Each day that a violation of this ordinance occurs is a separate offense.

The District will issue a Notice of Violation by certified mail or personal delivery at least ten days before taking enforcement action. Such notice must describe the violation and the

date by which corrective action must be taken. A customer may appeal the Notice of Violation by filing a written notice of appeal with the District no later than the close of business on the day before the date scheduled for enforcement action. Any Notice of Violation not timely appealed will be final. Upon receipt of a timely appeal, a hearing on the appeal will be scheduled, and the District will send by certified mail a written notice of the hearing date to the customer at least ten days before the date of the hearing. Pending receipt of a written appeal or pending a hearing pursuant to an appeal, the District may take appropriate steps to prevent the unauthorized use of water as appropriate to the nature and extent of the violations and the current declared water Level condition.

The District has established a water waste hotline (909) 348-8228 and an online report form on the District's website (www.wvwd.com) for customers to report water waste violations detailed in this Ordinance.

### 8.3.3 Review Process

If, due to unique circumstances, a specific requirement of this Ordinance would result in undue hardship to a District customer, the customer may apply for a waiver to the requirements as provided in this section. The waiver may be granted or conditionally granted only upon a written finding of the existence of facts demonstrating an undue hardship to a customer. Application for a waiver must be on a form prescribed by the District. The application must be accompanied by photographs, maps, drawings, and other information, including a written statement of the applicant.

An application for a waiver will be denied unless the District's Board of Directors finds, based on the information provided in the application, supporting documents, or such additional information as may be requested, that because of special circumstances applicable to the property or its use, the strict application of this chapter would have a disproportionate impact on the property or use that exceeds the impacts to residents or businesses. The applicant requesting the waiver must be promptly notified in writing of any action taken. Unless specified otherwise at the time a waiver is approved, the waiver will apply too the subject property during the period of the mandatory water supply shortage condition.

## 8.4 REVENUE AND EXPENDITURE IMPACTS/MEASURES TO OVERCOME IMPACTS

According to the UWMPA, the UWMP is required to include an urban water shortage contingency analysis that addresses the financial impacts from reduced water sales.

> *10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *10632 (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.*
>
> *10632 (g) An analysis of the impacts of each of the proposed measures to overcome those revenue and expenditure impacts, such as the development of reserves and rate adjustments.*

With water shortage contingency actions being implemented, the District may not have sufficient revenues to cover expenditures, including new staff, computer program modifications, billing changes, and advertising costs. If necessary, the District will utilize the rate stabilization fund to cover additional expenditures. The rate stabilization fund is composed of previous surplus drought surcharge funds. Should this fund be utilized, plans are in place to replenish the fund after any expenditure.

## 8.5 ACTIONS DURING A CATASTROPHIC INTERRUPTION

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that addresses a catastrophic interruption of water supplies.

> *10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *10632 (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.*

During declared shortages, or when a shortage declaration appears imminent, District will activate the Emergency Response Plan 2010. The plan is designed to prepare the District for a planned response to emergency situations associated with natural disasters, terrorist or other intentional attacks, technological incidents, or national security emergencies in, or affecting, the District's facilities and its service area.

In summary, the plan dictates that in the event of a catastrophic water supply interruption, the District is to employ a strict organization structure to coordinate staff. Each aspect of crisis management, including planning, logistics, finance, public information, damage assessment, customer service, and safety, are all predetermined. Emergencies are divided into either major or minor categories. A timeline is included for each category of emergency. Finally, an up-to-date contact list is included in the plan.

## 8.6 REDUCTION MEASURING MECHANISM

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that addresses aa method to measure a reduction in demands.

> *10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *10632 (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.*

The District's water system currently has water meters on all connections. These meters record the amount of water consumed at each location. District will use these meters in concert with the budgeted water allocations for each customer to monitor district-wide actual reductions in water use.